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EQUIVALENT ROUTE WINDS FOR HELICOPTER
AIR ROUTES AT HEIGHTS OF 5,000, 10,000, AND
18,000 FEET. VOLUME I

D. G. Brown, et al

Boeing Vertol Company
Philadelphia, Pennsylvania

April 1973

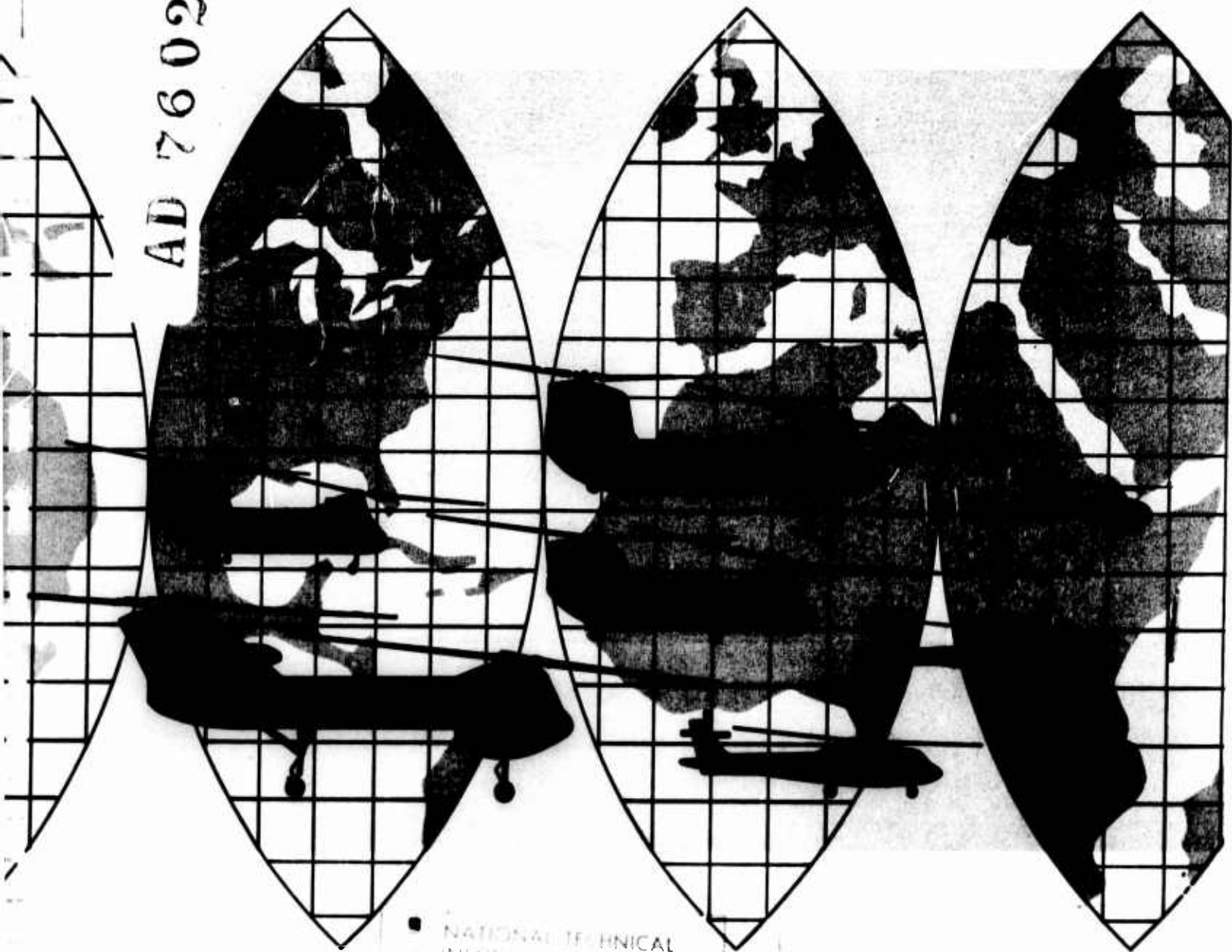
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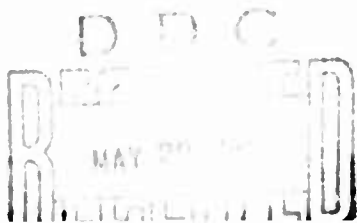


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Sheet III, Line 2 reads FORWARD - should read FOREWARD

Sheet VII, Title reads FORWARD - should read FOREWARD

Sheet 8. Para. 4.3, Line 1 reads 125-knot - should read 120-knot

Sheet 8. Para. 4.3, Equation (6) reads:

$$D' \approx 1/2 (D-R) + \frac{62.5}{A} (D+R)$$

Should read:

$$D' \approx 1/2 (D-R) + \frac{60.0}{A} (D+R)$$

Sheet 8. Para. 4.3, Equation (7) reads:

$$R' \approx -1/2 (D-R) + \frac{62.5}{A} (D+R)$$

Should read:

$$R' \approx -1/2 (D-R) + \frac{60.0}{A} (D+R)$$

Sheet 8. Para. 4.3, Line 11 reads 125 knots - should read 120 knots

Sheet 288 Line 10 reads FORT SILL elevation 119 - should read 1190

EQUIVALENT ROUTE WINDS FOR HELICOPTER AIR ROUTES

At Heights Of 5,000, 10,000, and 18,000 Feet

Volume I

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**THE BOEING VERTOL COMPANY
PHILADELPHIA, PA.**

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ABSTRACT

Equivalent headwinds or equivalent winds are computed using Sawyer's method for approximately 4400 strategic world air routes contained in Volumes I & II. The seasonal mean equivalent wind and its standard deviation and the annual 50-, 75-, and 85- percent reliability equivalent winds are tabulated. Route winds are computed for the 5000-, 10,000-, and 18,000 foot levels. An IBM 360/65 program was used to compute the equivalent winds. Input data for the program consist, for each level, of a grid composed of the mean vector wind and the standard vector deviation at the intersection of each 5° of latitude with each 10° of longitude between 60°S and 60°N and at the intersection of each 5° of latitude and each 20° of longitude south and north of 60°S and 60°N respectively. In addition to the equivalent winds, great circle distances are computed and tabulated for each route.

FORWARD

Ten years ago, The Boeing Company published documents on equivalent route winds for upper altitudes for domestic, international and military air routes for use in the airline industry: "Equivalent Winds for North American Air Routes," D6-9176; "Equivalent Winds for World Air Routes," D6-9177; and "Great Circle Equivalent Route Winds for Military Application," D6-9175. Since then, the helicopter industry has had a need for lower altitude wind data for helicopter routes and speeds.

Tables of winds for the lower altitudes were prepared and the computer program used for the earlier documents was modified to incorporate minor improvements in technique in order to correct inaccuracies which could occur for lower speed aircraft and to operate on the IBM 360/65 system.

Airfield bases listed in this document are only a sample of the total number available and are not chosen on major importance. It should be noted that one airfield may represent other stations within a radius of 50 miles, since the difference in the azimuths of the flight routes would be nominal, thus reflecting little if any changes in the calculated results of equivalent headwinds. Additional air routes may be requested by writing to the Boeing Vertol Company in care of the author.

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EQUIVALENT WINDS FOR HELICOPTER AIR ROUTES
AT HEIGHTS OF 5,000, 10,000 and 18,000 FEET

1.0 INTRODUCTION

The increasing ability (usually with aerial refueling and/or auxiliary tanks) for helicopters to deploy over long distances has established a requirement for route wind statistics with which to make long-term estimates of the economic and strategic capabilities of these aircraft. To meet this need for route-wind data, Boeing-Vertol analysts have computed seasonal and annual equivalent winds for principal air routes.

2.0 DEFINITIONS

2.1 Equivalent Route Wind

The equivalent wind for an air route may be defined as a uniform wind, which when directed along the track at all points, results in the same average ground speed as that actually attained. Alternately, the equivalent route wind is the difference between the average airspeed and the average groundspeed throughout the flight.

2.2 Reliability Equivalent Route Wind

The reliability equivalent wind is the equivalent headwind which is not exceeded (a route wind which can be relied upon) a given percent of occasions or time during a given period.

3.0 COMPUTATIONS

3.1 Equations

3.1.1. Equivalent Route Wind

Sawyer's theory of equivalent headwinds has been applied extensively to the computation of equivalent route winds ¹⁻⁹. This method involves use of the mean vector wind and the standard vector deviation, two parameters which completely define the circular normal distribution of winds generally found in the free atmosphere. Charts and tabulations of the mean vector wind and the standard vector deviation are available in many meteorological publications ¹⁰⁻¹⁹.

The principal assumptions of Sawyer's theory are (1) the wind speed does not exceed the speed of the aircraft and (2) the distribution of winds in the free atmosphere during a given season can be approximated by the circular normal distribution. Based on these and other assumptions, the basic equation for the average equivalent headwind, EW, over a route and expressed in terms of the mean vector wind and the standard vector deviation, σ , at points along the

3.1.1. Equivalent Route Wind (cont'd.)

route is:

$$EW = \frac{\sum_{i=1}^N z_i}{\sum_{i=1}^N t_i} - A$$

 z_i = length of i -th segment of route t_i = time to fly z_i A = airspeed of aircraft over route

$$\text{but } t_i = z_i / \bar{g}_i$$

where \bar{g}_i = mean ground speed on i -th segment

$$= A - \frac{1}{2A} (\bar{v}_i^2 + \frac{\sigma_1^2}{2}) + \bar{u}_i$$

 \bar{v}_i = mean vector wind component
normal to track

 \bar{u}_i = mean vector wind component parallel
to track

$$\text{and } z_i = Z/N$$

 Z = great circle route distance N = number of equal length segments z_i

$$EW = \frac{Z}{\sum_{i=1}^N \frac{Z/N}{\bar{g}_i}} - A$$

$$EW = \frac{Z}{\sum_{i=1}^N \frac{1}{\bar{g}_i}} - A$$

3.1.1. Equivalent Route Wind (cont'd.)

or, equivalent headwind is the harmonic mean* of the ground speeds less airspeed. By convention, when mean ground speed is less than airspeed, equivalent wind is a headwind and will be negative.

*The earlier Boeing documents used the arithmetic mean for headwind. Since the airspeed in their case was much greater than windspeed, error would be small. The harmonic mean is technically correct, and for lower airspeed, required to eliminate overestimates.

3.1.2. Route Standard Deviation

Correlation studies and physical considerations reveal that vector winds at points along a route are related to one another^{1,21}. For this reason, the mean vector wind and the standard vector deviation at points along a route while sufficient to determine the average value of the route equivalent wind, are insufficient to determine its variability. For example, strong winds at points along a route may or may not occur simultaneously. If they do not occur together, there is a tendency for the headwind components to average out such that the average value of the extreme winds is less than the values of the extreme winds at individual points over the route. Sawyer¹ has shown this to be the case.

The route standard deviation provides a measure of the variability of the equivalent route wind. The relationship between the route standard deviation and the average value of the standard vector deviation at points along the route is:

$$\sigma_t = S \sqrt{\frac{\sum_{i=1}^N \sigma_i^2}{N}}$$

where:

σ_t = Route standard deviation (tabulated value)

S = Factor to convert root mean square standard vector deviation of wind over a route, into the route standard deviation of the equivalent route wind. The value of S decreases with increasing route length and exhibits some variation with season, latitude and route orientation¹.

The values of S used in preparing Table 3 are those listed in Graystone⁶.

3.1.3. Great Circle Distance

Route lengths in nautical miles are computed over the great-circle

3.1.3. Great Circle Distance (cont'd.)

course, i.e., the least distance on a sphere, between terminals. The expression used to compute great circle distances is:

$$S = 60 \cos^{-1}(\sin \psi_1 \sin \psi_2 + \cos \psi_1 \cos \psi_2 \cos (\lambda_1 - \lambda_2))$$

where:

S = Great circle distance
in nautical miles

ψ = Latitude

λ = Longitude

\cos^{-1} = Angle expressed
in degrees

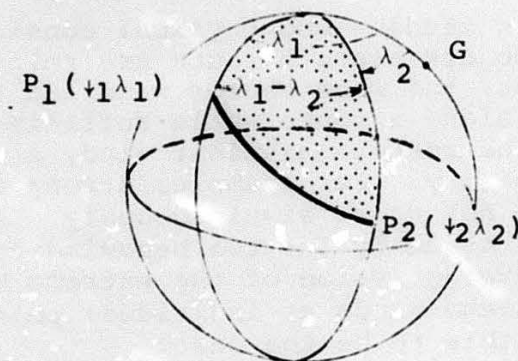


Fig. 1

Great Circle Distance

South latitudes and east longitudes are considered negative and north latitudes and west longitudes are considered positive.

3.2 Annual Equivalent Route Winds

Annual equivalent route winds for the 50%, 75%, and 85% level are computed from the seasonal mean values of equivalent route winds and their standard deviations. The technique involves an iterative procedure by which wind speeds are found such that 50, 75, and 85 percent of the total area under the four seasonal wind distribution curves, lies to their right. With reference to Figure 2, the 50, 75, and 85 annual equivalent winds are estimated to be -5, -11, and -13 knots respectively. (From the

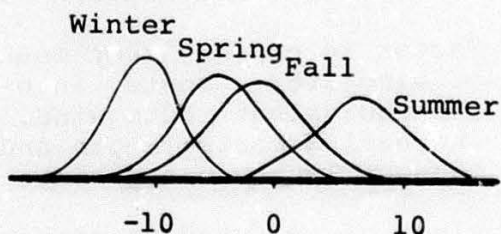


Fig. 2. Hypothetical Seasonal Wind Distribution

3.2 Annual Equivalent Route Winds (cont'd.)

definition, these are the headwinds - headwinds are negative - which will not be exceeded X% of the time. If the distribution of winds are entirely positive (tailwinds) the technique is the same. To assure a headwind value which will not be exceeded, one must get the lowest value of tailwind which meets the reliability level.

3.3 Input Data

The most recent and internally consistent summaries of statistical wind data available were used. Wind statistics were obtained primarily from Crutcher⁵ and the NAVAIR publications while the airfield coordinates were obtained from standard reference sources. The mean vector wind and the standard vector deviation together with the coordinates of each terminal form the input data for an IBM 360/65 program. The wind parameters for the four seasons and for the 5000 (850 mb), 10,000 (700 mb), and 18,000 (500 mb) foot levels, were obtained by computing them at the intersection of each 5° of latitude with each 10° of longitude between 60°N and 60°S and at the intersection of each 5° of latitude with each 20° of longitude north of 60°N and south of 60°S.

3.4 Method

Equivalent route winds are computed by first dividing the route into an integral number of segments of 200 miles or less in length and then calculating the segment flight time resulting from the wind vectors at the mid-points of these segments. This is accomplished by weighing the four nearest wind values (at grid points) in proportion to their proximity to the point on the route. The times are summed for the entire route, and resulting average ground speed is calculated. Equivalent wind results by subtracting average airspeed from the average ground speed.

By convention, a positive sign denotes a tailwind; a negative sign, a headwind.

3.5 Tabulations

Equivalent winds for the 5,000-, 10,000-, 18,000- foot levels are tabulated for routes between selected airfields (Table 3). The route wind tabulations are organized alphabetically by the terminals that identify each route. In the index, each route is referenced under both of its terminals (Table 4). Included in the data are:

3.5 Tabulations (cont'd.)

1. The direct and return seasonal mean equivalent route wind and its standard deviation and the annual 50-, 75-, and 85- percent reliability equivalent route wind in knots.
2. The great circle distance in nautical miles.

An alphabetical listing of terminals with their geographical coordinates is provided in Table 3.

4.0 USE OF TABLES

4.1 Normal Curve

Brooks¹⁰ et al found that in any one season the distribution of equivalent route winds about the mean closely approximates the normal law of errors. According to this law, the mean and its standard deviation completely define the distribution of winds about the mean. In turn, this error distribution very nearly approximates the normal or Gaussian frequency distribution defined as:

$$Y = \frac{1}{\sigma \sqrt{2\pi}} e^{-x^2/2\sigma^2}$$

where:

Y = The frequency ordinate at distance x from the mean

σ = The standard deviation

4.2 Estimating Reliability Equivalent Route Winds

Computation of reliability equivalent route winds deserves special attention since deviations of the relative frequency of extreme wind speeds from the assumed normal law of errors may be appreciable, particularly at levels and in regions affected by jet streams. The frequency of extreme values is probably higher than that predicted from the assumed model. For this reason, reliability equivalent winds for percentages less than 5 and greater than 95 are likely unreliable.

Two methods for estimating equivalent winds for reliabilities other than for the tabulated mean values involve use of error factors and secondly, use of arithmetic probability paper.

4.2.1. Error Factor Method

For a given route, reliability equivalent winds are computed by subtracting the product of k times the standard deviation from the

4.2.1. Error Factor Method (cont'd.)

mean equivalent wind, where k is a factor derivable from the error function. Values of k are given in Table 1 or can be found from tables of the normal curve of error. These methods are accurate only for estimating seasonal reliabilities. The seasonal curves approximate the normal law of errors, but the annual curve does not. Therefore, to get an annual reliability requires an iterative technique as described in 3.2.

The error factors method is illustrated by computing the 85 percent reliability equivalent route wind over the great circle - Ft. Rucker to Ft. Eustis air route, in winter at 5,000 feet.

TABLE 1. ERROR FACTORS

Reliability Percent (Area under normal curve to $+k$)	$+k$ (Number of standard deviations from the mean)
50	0.0
60	0.25
70	0.52
80	0.84
85	1.04
90	1.28
95	1.65

From Table 1, the error factor is 1.04.

- a. The DIRECT reliability equivalent headwind which should not be exceeded on 85 percent of occasions is a wind of -23 knots:

$$-11 - (1.04 \times 12) = -23 \text{ knots.}$$

or, Mean - $1.04 \sigma_t$ (See 3.2)

- b. The RETURN reliability equivalent headwind which can be relied on 85 percent of occasions is a wind of -2.5 knots;

$$10 - (1.04 \times 12) = -2.5 \text{ knots.}$$

or, Mean - $1.04 \sigma_t$ (See 3.2)

4.2.2. Arithmetic Probability Paper Method

As previously stated, in any season the distribution of equivalent route winds about the mean closely approximates the normal law of errors and the normal or Gaussian frequency distribution defined in (4). Arithmetic probability paper is arranged with the percent cumulative frequency scale printed on the ordinate such that the integral of the normal

4.2.2. Arithmetic Probability Paper Method (cont'd.)

$$Q(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-x^2/2} dx \quad (5)$$

frequency curve plots as a straight line while the abscissa has a linear scale. The sign convention is followed for equivalent wind speeds (+ for a tailwind and - for a headwind). These two lines give the frequency distribution of equivalent winds over the route.

4.3 Variation in Airspeed

The tabulated equivalent wind data were computed for a 125-knot airspeed. For airspeeds much above this value, the new values may be approximated by assuming the wind speed is the result of the arithmetic mean of the ground speeds.

Expressions to use are:

$$D' = 1/2 (D - R) + \frac{62.5}{A} (D + R) \quad (6)$$

$$R' = -1/2 (D - R) + \frac{62.5}{A} (D + R) \quad (7)$$

If D and R are of equal value and of opposite sign, the tabulated values are the same for any airspeed. If $D \perp R$, i.e., a cross wind component is present, D' and R' will differ slightly from D and R.

Caution should be exercised when attempting to use airspeeds less than 125 knots, because simplifications used in the basic Sawyer method will cause increasing error as wind speeds at any segment approach aircraft speed.

Percent reliability equivalent headwinds computed for the new airspeed, A, will differ by the same amount as the mean values, i.e., $D - D'$, because standard deviations are not sufficiently affected by changes in airspeed².

4.4 Great Circle Route Length

The route length in nautical miles is computed over the great-circle course, i.e., the least distance on a sphere, between terminals (Fig. 3). For completeness, a great circle may be defined as the intersection of the surface of a sphere and a plane which passes through the center of the sphere. A nautical mile is the length

4.4 Great Circle Route Length (cont'd.)

on one minute of arc along a great circle on the earth's surface, i.e., the earth's circumference is $360 \times 60 = 21,600$ n. mi. In terms of statute miles, 1 n. mi. = 1.1508 miles.

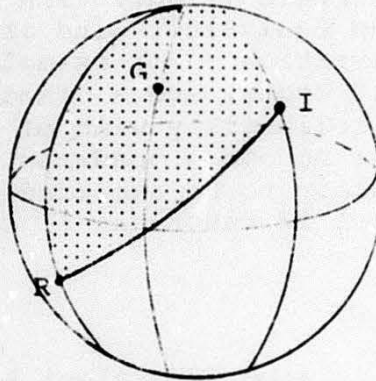


Figure 3 Great Circle Route Length

4.5 Equivalent Route Length

The equivalent route length, for a given reliability equivalent wind, is the distance that an aircraft would have flown in still air on a flight having the same duration as that required with given percent equivalent wind. The equivalent route length may be expressed as

$$L_x = \frac{DA}{A + W_x} \quad (11)$$

where:

L_x = Equivalent route length in knots for x percent reliability equivalent wind W_x

D = Great circle distance in nautical miles

A = Airspeed in knots

5.0 OCCURRENCE OF HEADWINDS ON BOTH DIRECT AND RETURN FLIGHTS

Over routes characterized by prevailing light winds or by strong winds perpendicular to track the direct and return route winds can both appear as a headwind. This situation occurs when the contribution to the mean equivalent wind from the wind components at right angles to the track exceeds the contribution from the wind components along the track. The effect of winds at right angles to track on the ground speed becomes apparent when it is realized that an

5.0 OCCURRENCE OF HEADWINDS ON BOTH DIRECT AND RETURN FLIGHTS (cont'd.)

airplane could make no progress along the intended track with a wind at right angles to the track and equal to its airspeed.

Reliability equivalent headwinds for some routes appear as headwinds for the direct and return flight. The situation can occur over routes where the mean equivalent wind is about the same magnitude as its standard deviation. For example, a route having a mean equivalent wind of 12 knots, and a standard deviation of 15 knots, has an 85 percent reliability wind of -3 knots. In this example a tailwind has not become a headwind, but rather a headwind of 3 knots is not likely to be exceeded on 85 percent of occasions and a tailwind of 12 knots can be relied on 50 percent of occasions.

6.0 RELIABILITY OF RESULTS

The reliability of the tabulated equivalent headwinds as being representative of the actual route winds over great circle routes depends largely upon the assumption that wind distributions in the free atmosphere can be treated by the circular normal distribution. This distribution requires that the zonal and meridional components of wind be uncorrelated and that their standard deviation be equal. From physical considerations, however, some degree of ellipticity must be present, otherwise there would be no mean transport of energy in the atmosphere as is observed. For most conditions, the degree of ellipticity is small and the assumed circular normal distribution acceptable. Brooks¹⁰ pointed out that the assumption of circularity is likely to be weakest in frontal zones, in the vicinity of jet streams and in areas characterized by distinct seasonal wind variation such as the boundary region between a monsoon circulation and the circulation above.

The tabulated values are intended as long term estimates of enroute winds and as such the actual winds in any one season may differ appreciably from them. This condition particularly occurs where all routes closely parallel the mean position of the jet stream. Where air routes routinely traverse normal to the jet stream, however, only small differences between the tabulated and observed route winds should occur.

7.0 CONCLUSION

The application of equivalent winds can aid agencies concerned with the problems of aircraft logistics to estimate the long term capabilities of helicopters to deploy over long distances. Considerable effort has been expended by Boeing-Vertol since 1965 to display temperature probability variations with altitude. Many government agencies are using our data on that subject. By combining that data with the wind data of this document, one can estimate fairly accurately the effects on helicopter performance.

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TABLE 3

**EQUIVALENT ROUTE WINDS FOR HELICOPTER AIR ROUTES
AT HEIGHTS OF 5,000, 10,000, AND 18,000 FOOT LEVELS**

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85		
ARADAN																
5000	5	5	3	4	4	3	-1	-5	-5	-4	-3	-5	-9	-10	6	1067 N.M.I.
10000	0	3	5	3	2	-2	-3	-1	-4	-4	-3	-4	-9	-10	8	7 6 6
18000	-8	-1	6	-5	-2	-10	-12	2	-2	-6	5	-1	-8	-9	12	11 7 8
ABADAN																
5000	-5	-5	-8	-5	-7	-12	-14	5	5	9	5	6	0	-1	9	266 N.M.I.
10000	-13	-12	-8	-8	-11	-18	-20	11	11	8	7	9	1	0	12	11 10 11
18000	-29	-25	-11	-11	-18	-30	-33	22	21	11	8	14	4	2	19	16 11 13
ABADAN																
5000	5	7	10	1	5	1	0	-4	-7	-10	-1	-6	-11	-12	6	1498 N.M.I.
10000	11	9	3	2	5	3	0	-12	-9	-3	-2	-7	-12	-14	7	6 6 5
18000	29	21	2	8	13	4	2	-33	-24	-2	-9	-16	-29	-32	11	10 6 8
ARADAN																
5000	4	5	10	5	6	3	-1	-4	-6	-10	-5	-7	-13	-15	9	265 N.M.I.
10000	4	8	6	5	5	-1	-2	-7	-10	-6	-5	-7	-14	-16	11	11 9 10
18000	9	9	6	-4	4	-5	-8	-19	-17	-7	1	-10	-21	-24	18	15 10 12
ARADAN																
5000	5	8	7	2	5	3	0	-5	-8	-7	-1	-6	-11	-12	7	1055 N.M.I.
10000	14	12	3	4	7	2	0	-15	-12	-3	-4	-9	-15	-17	8	7 7 6
18000	34	27	4	12	17	7	4	-37	-29	-5	-13	-20	-34	-37	13	12 8 9
ARADAN																
5000	4	7	1	1	3	-1	-2	-3	-6	-1	0	-3	-7	-8	6	1346 N.M.I.
10000	12	11	2	5	7	1	0	-13	-11	-2	-5	-8	-14	-15	7	6 6 5
18000	34	29	5	15	19	9	6	-35	-30	-6	-16	-21	-33	-36	12	11 8 9
ARADAN																
5000	4	8	3	1	3	3	-1	-3	-7	-3	0	-4	-8	-9	6	1508 N.M.I.
10000	14	12	2	4	7	2	0	-14	-12	-2	-4	-8	-14	-16	7	6 6 5
18000	36	29	3	14	19	7	5	-37	-30	-4	-14	-21	-34	-37	12	10 7 8
ARADAN																
5000	2	3	-5	0	0	-5	-8	-2	-3	5	0	0	-6	-8	9	328 N.M.I.
10000	10	7	-2	2	3	-4	-6	-12	-9	2	-3	-6	-14	-16	11	11 10 11
18000	11	10	7	14	10	3	-1	-21	-18	-8	-16	-16	-26	-29	18	15 11 13
ARADAN																
5000	6	8	4	3	5	3	-1	-5	-8	-4	-3	-5	-11	-12	8	660 N.M.I.
10000	17	14	3	6	9	2	0	-17	-15	-2	-6	-10	-18	-20	9	8 8 7
18000	37	32	9	16	21	10	8	-39	-33	-9	-17	-23	-37	-40	16	13 9 11

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

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EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

EQUIVALENT HEADWIND IN KNOTS															
HEIGHT IN FEET	DIRECT						RETURN						STANDARD DEVIATION		
	JAN	APR	JUL	OCT	**A50	A75 A85	JAN	APR	JUL	OCT	**A50	A75 A85			
ADAK NS	ATTU														
5000	-6	-7	-9	-12	-9	-22		4	6	8	10	7	-3	-5	377 N.M.I.
10000	-12	-9	-12	-18	-13	-24		9	7	11	17	11	0	-2	15
18000	-16	-18	-17	-24	-19	-34		9	14	14	21	14	0	-3	16
ADAK NS	CHITOSE AB														
5000	-9	-9	-7	-14	-10	-17		7	8	7	12	8	1	0	1753 N.M.I.
10000	-18	-14	-10	-21	-16	-24		16	11	9	19	13	5	4	10
18000	-28	-23	-13	-30	-24	-38		21	19	11	26	18	8	6	11
ADAK NS	DUTCH HARBOR														
5000	7	5	9	8	7	-2		-9	-6	-10	-10	-9	-19	-22	305 N.M.I.
10000	15	9	12	15	12	1	0	-17	-11	-13	-17	-15	-26	-29	15
18000	20	15	17	19	17	3	0	-25	-18	-20	-23	-22	-36	-40	16
ADAK NS	EIELSON AFB														
5000	0	3	6	3	3	-3		-1	-3	-7	-4	-4	-11	-13	1189 N.M.I.
10000	6	4	8	7	6	-1	-3	-9	-5	-8	-8	-8	-16	-18	9
18000	12	7	10	9	9	-1	-4	-17	-10	-12	-13	-13	-24	-27	10
ADAK NS	ELMENDORF AFB														
5000	1	3	8	4	4	-3		-3	-4	-8	-5	-6	-13	-15	1039 N.M.I.
10000	8	4	8	8	7	-1	-3	-11	-6	-9	-10	-10	-18	-20	11
18000	14	9	11	11	11	0	-3	-19	-12	-14	-15	-15	-27	-30	12
ADAK NS	JUNEAU														
5000	2	3	6	4	3	-2	-4	-4	-4	-6	-5	-5	-12	-13	11
10000	9	4	7	8	6	0	-2	-12	-6	-8	-10	-9	-17	-19	13
18000	17	10	12	13	12	2	0	-21	-13	-14	-17	-17	-27	-30	14
ADAK NS	KODIAK														
5000	5	4	9	6	6	-1	-4	-7	-5	-9	-7	-8	-16	-18	1468 N.M.I.
10000	11	6	9	11	9	0	-2	-13	-8	-10	-13	-11	-21	-23	9
18000	18	11	14	14	14	1	-1	-23	-14	-17	-18	-18	-31	-34	11
ADAK NS	WIDWAY ISLAND														
5000	-10	-5	-8	-4	-7	-15	-17	4	2	6	1	3	-4	-6	899 N.M.I.
10000	-9	-6	-7	0	-6	-14	-15	3	1	4	-3	1	-6	-8	12
18000	-15	-9	-2	-3	-7	-17	-20	0	-2	-2	-7	-3	-13	-15	13
ADAK NS	MISAWA AB														
5000	-11	-10	-8	-14	-11	-18	-20	9	9	7	13	9	2	1	10
10000	-20	-14	-10	-22	-17	-25	-27	17	12	9	19	14	6	4	11
18000	-30	-25	-14	-32	-24	-36	-39	23	20	11	27	19	9	7	11

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND SPEED	EQUVALENT HEADWIND IN KNOTS FOR GREAT CIRCLE AIR ROUTES												STANDARD DEVIATION			
	DIRECT						RETURN						JAN APR JUL OCT			
	JAN	APR	JUL	OCT	0045J	A75	AB5	JAN	APR	JUL	OCT	0045J	A75	AB5		
ADAMS																
5000	3	2	6	2	2	-4	-5	0	-2	-6	-2	-3	-10	-11	11	1340 N.M.I.
10000	4	3	7	5	4	-2	-4	-6	-4	-9	-6	-7	-14	-16	13	9 8 9
15000	7	6	9	7	7	-2	-5	-12	-9	-10	-10	-11	-21	-23	17	11 10 11
															17	14 13 15
ADAMS																
5000	-6	-7	-9	-17	-9	-19	-22	4	6	3	10	7	-3	-5	17	342 N.M.I.
10000	-13	-9	-12	-19	-14	-25	-28	10	7	11	17	11	0	-2	10	15 13 15
15000	-16	-14	-17	-25	-20	-34	-38	10	14	14	21	14	0	-3	24	10 17 14 17
															24	22 18 21
ADAMS																
5000	1	5	3	3	5	-1	-2	-1	-5	-9	-7	-6	-13	-14	8	848 N.M.I.
10000	4	6	15	15	11	3	1	-7	-4	-15	-16	-12	-20	-22	10	9 10 10
15000	15	14	23	24	20	10	8	-15	-20	-28	-33	-24	-35	-38	11	10 11 12
															11	14 16 16
ADAMS																
5000	3	1	3	3	3	-4	-5	0	-1	-3	-3	-2	-8	-9	7	1223 N.M.I.
10000	4	4	4	4	3	-1	-3	-2	-4	-7	-8	-6	-12	-13	6	0 9 8
15000	3	4	4	4	3	-3	-5	-5	-6	-12	-12	-9	-17	-19	4	0 9 9
															4	11 13 12
ADAMS																
5000	1	2	-1	-2	3	-5	-6	-1	-3	3	1	-1	-6	-7	7	1411 N.M.I.
10000	5	2	-2	-3	3	-5	-7	-6	-3	3	0	-2	-8	-9	6	7 7 8
15000	-4	-3	-10	-10	-7	-16	-16	1	1	1	3	1	-5	-6	4	0 0 0
															4	10 12 11
ADAMS																
5000	5	10	9	10	4	3	-1	-7	-11	-9	-11	-10	-18	-20	10	347 N.M.I.
10000	10	14	13	15	11	3	1	-11	-12	-15	-17	-15	-24	-27	13	12 12 13
15000	17	21	21	24	24	9	6	-13	-24	-25	-34	-26	-39	-42	15	13 13 14 15
															15	18 23 20
ADAMS																
5000	2	2	4	4	3	-2	-3	0	-3	-3	-6	-4	-10	-11	7	1671 N.M.I.
10000	4	3	14	14	10	4	2	-5	-8	-15	-15	-11	-18	-19	6	7 7 8
15000	14	17	27	24	20	12	10	-15	-19	-31	-31	-24	-33	-36	9	0 8 9
															9	11 12 12
ADAMS																
5000	-7	-12	-14	-12	-12	-11	-19	7	11	14	12	10	-5	-7	9	1142 N.M.I.
10000	-11	-17	-21	-21	-13	-25	-28	13	16	20	20	16	9	7	6	0 9 9
15000	-19	-25	-29	-41	-28	-43	-43	18	23	25	34	25	14	12	12	9 10 13 12
															12	14 16 16
ADAMS																
5000	0	0	2	2	0	-3	-5	3	0	-2	-2	-2	-8	-7	7	1598 N.M.I.
10000	3	2	4	4	2	-2	-3	0	-2	-6	-7	-4	-10	-11	7	0 7 7
15000	7	3	3	3	2	-3	-4	-4	-5	-10	-10	-7	-14	-16	8	9 9 11 10

REMARKS--COMPUTED FOR A 120-KT AIR-SPEED.
 000--VALUES ARE EQUIVALENT HEADWINDS FOR INDICATED SEA STATE RELIABILITIES.
 1000--VALUES ARE EQUIVALENT HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**450	A75	A85	JAN	APR	JUL	OCT	**450	A75	A85	JAN	APR	JUL	OCT
ALAMEDA NAS	ELLINGTON AFB																	
5000	2	1	-1	-1	0	-5	-6	-3	-2	1	0	-1	-6	-7	8	7	5	7
10000	13	10	1	6	6	0	0	-14	-11	-1	-6	-8	-15	-17	10	9	6	8
18000	26	21	5	13	14	5	3	-31	-25	-6	-15	-18	-31	-34	16	14	8	13
ALAMEDA NAS	ELLSWORTH AFB																	
5000	4	4	2	4	3	-1	-2	-5	-4	-2	-4	-4	-9	-10	8	8	6	7
10000	11	7	8	8	8	1	0	-13	-8	-8	-9	-10	-17	-18	11	10	8	10
18000	19	15	18	15	16	6	3	-26	-19	-19	-19	-21	-32	-34	19	17	11	16
ALAMEDA NAS	ELMFORD AFB																	
5000	0	2	0	1	0	-5	-6	-1	-3	0	-2	-2	-7	-8	5	8	6	8
10000	-8	-2	-3	-1	-4	-11	-12	4	0	2	-1	0	-6	-7	12	10	8	10
18000	-19	-9	-10	-10	-12	-22	-25	11	2	7	3	5	-4	-6	17	15	11	14
ALAMEDA NAS	EL TORO MCAS																	
5000	5	5	2	2	3	-2	-3	-5	-5	-2	-2	-4	-10	-11	10	9	7	8
10000	10	9	0	4	5	-3	-5	-11	-10	0	-5	-6	-16	-18	15	14	9	12
18000	17	12	3	7	8	-3	-6	-23	-17	-5	-10	-13	-27	-31	23	20	13	18
ALAMEDA NAS	ENGLAND AFB																	
5000	3	3	0	0	1	-3	-4	-3	-3	0	0	-2	-7	-8	8	7	5	7
10000	14	11	3	7	8	2	0	-16	-12	-3	-7	-9	-16	-18	10	9	7	8
18000	28	23	7	15	16	7	5	-33	-26	-8	-17	-20	-32	-35	16	14	8	13
ALAMEDA NAS	FORT BENNING																	
5000	5	4	2	2	3	-1	-2	-6	-5	-2	-2	-4	-9	-10	8	7	5	6
10000	17	12	5	8	9	4	2	-18	-13	-5	-9	-11	-18	-20	9	9	6	8
18000	31	24	10	17	19	10	8	-36	-28	-11	-20	-23	-35	-38	15	13	8	12
ALAMEDA NAS	FORT BLISS																	
5000	1	2	0	-2	0	-4	-5	-1	-2	0	3	0	-5	-6	8	7	5	6
10000	11	9	2	5	6	0	-2	-12	-10	-2	-5	-7	-15	-17	12	10	7	10
18000	24	19	5	11	13	2	0	-29	-23	-7	-14	-17	-30	-34	19	17	10	15
ALAMEDA NAS	FORT CAMPBELL																	
5000	5	4	3	2	3	-1	-2	-6	-5	-3	-3	-5	-9	-11	8	8	5	7
10000	17	12	7	10	11	4	3	-18	-12	-7	-10	-12	-19	-20	10	9	7	9
18000	31	23	14	19	20	11	9	-36	-26	-15	-22	-24	-35	-38	16	14	9	13
ALAMEDA NAS	FORT CARSON																	
5000	1	2	0	-1	0	-4	-5	-1	-2	0	1	0	-5	-6	7	7	5	6
10000	12	9	6	8	8	1	0	-13	-9	-6	-8	-9	-16	-18	12	11	8	10
18000	25	20	15	16	18	7	4	-29	-23	-15	-18	-21	-33	-36	20	18	11	17

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION			
	DIRECT					RETURN					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	2	2	0	-1	0	-4	-5	-2	-2	0	1	-1	-5	-7
10000	13	10	2	6	7	0	0	-14	-11	-2	-6	-8	-15	-17
16000	27	22	6	14	15	5	3	-31	-25	-8	-16	-19	-31	-35
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	1	2	0	-1	0	-6	-5	-1	-2	0	1	-1	-5	-7
10000	11	9	1	4	5	-1	-3	-12	-10	-1	-5	-7	-15	-17
16000	22	17	4	9	11	0	-2	-27	-21	-5	-12	-15	-29	-32
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	5	5	3	3	3	0	-2	-6	-5	-3	-3	-5	-10	-11
10000	17	11	8	10	11	5	3	-19	-12	-8	-11	-13	-19	-21
16000	31	22	15	20	20	11	9	-36	-26	-16	-23	-24	-36	-38
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	3	3	2	2	2	-2	-3	-3	-4	-2	-2	-3	-8	-9
10000	14	9	7	9	9	3	1	-16	-10	-7	-10	-11	-18	-19
16000	27	21	16	18	19	10	7	-32	-24	-16	-21	-23	-34	-37
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	2	2	-2	2	0	-5	-6	-3	-2	3	-2	-1	-7	-9
10000	-3	0	1	1	0	-8	-11	0	-1	-1	-3	-2	-10	-12
16000	-11	-5	-1	-3	-5	-18	-22	0	-1	-2	-3	-2	-15	-18
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	4	4	1	1	2	-2	-3	-5	-4	-1	-1	-3	-8	-9
10000	16	12	4	8	9	3	2	-17	-13	-4	-8	-10	-17	-19
16000	30	24	9	16	18	9	7	-35	-28	-10	-19	-22	-34	-37
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	2	2	0	0	0	-4	-5	-2	-2	0	0	-1	-6	-7
10000	14	11	5	7	8	2	0	-15	-11	-5	-8	-10	-17	-19
16000	28	22	11	16	18	7	5	-32	-26	-12	-18	-21	-33	-37
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	2	2	0	0	0	-3	-5	-2	-2	0	0	-1	-6	-7
10000	14	11	3	7	8	1	0	-15	-11	-3	-7	-9	-16	-18
16000	28	22	9	15	17	7	5	-32	-25	-10	-17	-20	-32	-35
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	5	5	3	4	4	0	-1	-6	-5	-3	-5	-5	-10	-11
10000	16	9	10	11	11	5	3	-17	-10	-10	-12	-13	-19	-20
16000	27	20	19	20	21	12	10	-33	-23	-19	-23	-24	-34	-37

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DEVOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00150	A75	A85	JAN	APR	JUL	OCT	00150	A75	A85		
ALAMEDA NAS	TO															
5000	3	4	0	2	1	-2	-3	-3	-3	0	-2	-2	-7	-9	4	508 N.M.I.
10000	10	7	7	7	7	0	-1	-12	-8	-7	-7	-9	-16	-18	14	8 5 7
18000	19	15	16	14	15	3	0	-25	-20	-17	-17	-20	-32	-36	22	12 8 11
ALAMEDA NAS	TO															
5000	5	4	2	2	3	-1	-2	-6	-5	-2	-2	-4	-9	-10	8	1707 N.M.I.
10000	17	12	6	9	10	4	2	-18	-13	-6	-10	-12	-19	-21	10	8 5 7
18000	31	24	12	18	19	10	8	-36	-27	-13	-21	-23	-35	-38	15	9 7 9
ALAMEDA NAS	TO															
5000	1	3	-1	2	0	-4	-5	-2	-4	1	-2	-2	-8	-9	10	1332 N.M.I.
10000	-5	-2	-2	0	-2	-9	-11	1	0	1	-2	0	-7	-8	12	8 6 8
18000	-16	-6	-8	-8	-10	-20	-23	7	0	5	0	2	-7	-10	18	11 8 10
ALAMEDA NAS	TO															
5000	-5	-1	-3	-3	-3	-9	-11	3	0	3	1	1	-4	-5	10	1689 N.M.I.
10000	-11	-5	-5	-5	-7	-14	-16	8	2	4	2	3	-3	-5	13	8 7 9
18000	-23	-13	-13	-14	-16	-26	-29	15	6	10	7	9	0	-3	18	11 9 10
ALAMEDA NAS	TO															
5000	4	3	-2	3	1	-4	-5	-4	-3	2	-3	-2	-8	-10	10	578 N.M.I.
10000	0	1	3	4	2	-5	-7	-3	-3	-3	-5	-4	-12	-14	15	9 6 8
18000	-4	0	5	0	0	-12	-15	-6	-6	-8	-7	-7	-20	-23	22	13 8 12
ALAMEDA NAS	TO															
5000	4	3	2	1	2	-2	-3	-4	-4	-2	-1	-3	-8	-9	8	1449 N.M.I.
10000	16	12	5	9	10	3	2	-17	-12	-5	-9	-11	-18	-20	10	8 5 7
18000	30	23	12	17	19	9	7	-34	-26	-12	-20	-22	-34	-37	16	9 7 9
ALAMEDA NAS	TO															
5000	6	5	3	4	4	0	-1	-7	-6	-3	-4	-5	-10	-12	8	1820 N.M.I.
10000	17	11	9	11	11	5	4	-19	-13	-9	-12	-13	-20	-22	10	7 6 7
18000	31	22	17	21	21	13	11	-37	-26	-18	-24	-26	-36	-39	15	9 7 9
ALAMEDA NAS	TO															
5000	3	4	1	0	1	-3	-4	-3	-3	-1	0	-2	-7	-8	9	537 N.M.I.
10000	11	9	2	5	6	-1	-3	-12	-10	-2	-6	-7	-16	-18	14	8 6 7
18000	23	18	6	11	13	1	-1	-28	-21	-8	-13	-17	-30	-34	21	12 8 11
ALAMEDA NAS	TO															
5000	4	4	2	1	2	-2	-3	-5	-4	-2	-2	-4	-8	-10	8	1549 N.M.I.
10000	14	12	6	9	10	4	2	-18	-13	-6	-9	-12	-18	-20	10	8 5 7
18000	30	23	12	18	19	10	8	-35	-27	-13	-20	-23	-34	-37	16	9 7 9

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

+PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUVALENT HEADWINDS												RETURN				STANDARD DEVIATION			
	DIRECT						HEADWIND						IN D.S.				JAN APR JUL OCT			
	JAN	APR	JUL	OCT	00450	075	085	JAN	APR	JUL	OCT	00450	075	085			JAN	APR	JUL	OCT
ALAMEDA NAS	TO						MEXICO CITY													
5000	-3	-4	-3	-2	-4	-7	-8	3	3	4	2	3	0	-1			7	6	4	6
10000	5	4	-2	0	0	-4	-5	-7	-5	2	0	-2	-8	-10			8	8	5	7
18000	14	11	-2	3	5	-2	-4	-20	-15	1	-5	-9	-19	-22			13	11	7	10
ALAMEDA NAS	TO						MINN-ST PAUL													
5000	5	4	3	5	4	0	-2	-5	-5	-3	-5	-5	-10	-11			8	8	6	8
10000	14	9	10	10	10	4	2	-15	-9	-10	-11	-12	-18	-19			10	10	7	9
18000	23	17	19	18	19	9	7	-29	-21	-20	-22	-23	-33	-36			17	15	10	15
ALAMEDA NAS	TO						MINOT AFB													
5000	7	4	2	5	4	0	-2	-7	-4	-2	-5	-5	-10	-12			9	8	6	8
10000	10	4	8	8	8	1	0	-12	-7	-8	-9	-9	-16	-18			11	10	8	10
18000	15	12	17	14	14	4	1	-23	-17	-19	-19	-20	-30	-33			18	16	11	16
ALAMEDA NAS	TO						NELLIS AFB													
5000	4	5	2	0	2	-3	-4	-4	-4	-2	0	-3	-8	-10			10	8	6	8
10000	12	9	4	7	7	0	-2	-13	-10	-4	-7	-8	-17	-20			15	14	9	12
18000	24	19	10	13	15	3	0	-29	-22	-12	-15	-19	-33	-37			23	21	13	19
ALAMEDA NAS	TO						NEW ORLEANS													
5000	3	3	0	0	1	-3	-4	-4	-3	0	0	-2	-7	-8			8	7	5	6
10000	14	11	2	7	8	2	0	-16	-12	-2	-7	-9	-16	-18			9	8	6	8
18000	28	23	6	15	16	7	5	-33	-26	-7	-17	-20	-32	-35			15	13	8	12
ALAMEDA NAS	TO						NIAGARA FALLS													
5000	7	5	4	6	5	0	0	-8	-6	-4	-6	-6	-11	-13			8	8	6	7
10000	17	11	11	12	12	6	5	-19	-12	-11	-13	-14	-20	-22			9	9	7	8
18000	29	20	20	21	22	13	11	-35	-24	-21	-25	-26	-36	-38			15	14	9	13
ALAMEDA NAS	TO						ONAF AFB													
5000	5	5	2	3	3	-2	-3	-5	-5	-2	-2	-4	-10	-11			11	9	7	8
10000	9	9	0	4	4	-3	-5	-11	-10	0	-4	-6	-16	-18			16	15	9	12
18000	15	9	2	6	7	-5	-8	-22	-15	-4	-9	-12	-26	-30			24	21	13	19
ALAMEDA NAS	TO						PITTSBURGH													
5000	7	5	4	5	5	0	0	-8	-6	-4	-5	-6	-11	-12			8	7	6	7
10000	18	12	10	11	12	6	5	-20	-13	-10	-12	-14	-20	-22			9	9	7	8
18000	31	22	18	21	22	13	11	-37	-26	-19	-25	-26	-36	-39			15	14	8	13
ALAMEDA NAS	TO						REGINA													
5000	7	4	1	4	3	-1	-2	-8	-4	-1	-4	-4	-10	-12			9	8	5	8
10000	7	5	7	7	6	0	-1	-10	-6	-7	-8	-8	-15	-17			11	10	6	10
18000	9	9	14	10	10	0	-2	-18	-14	-16	-15	-16	-27	-29			18	16	12	16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00150	075	075	075	075	075	JAN	APR	JUL	OCT
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	4	3	2	3	3	-1	-2	-2	-2	-2	-5	-5	-3	-3
10000	16	10	8	13	10	4	3	3	3	3	-17	-11	-8	-11
18000	29	22	16	19	20	11	9	9	9	9	-34	-25	-16	-22
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	6	5	4	5	4	0	-1	-1	-1	-1	-7	-5	-4	-5
10000	17	10	10	11	11	5	4	4	4	4	-19	-11	-10	-12
18000	29	20	19	20	21	12	10	10	10	10	-34	-24	-20	-24
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	6	5	4	5	4	0	0	0	0	0	-7	-5	-4	-5
10000	16	9	11	11	11	5	4	4	4	4	-18	-11	-11	-12
18000	27	19	20	20	21	12	10	10	10	10	-33	-23	-21	-24
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	3	3	2	3	3	0	-6	-6	-6	-6	-4	-3	2	-2
10000	-1	0	2	3	1	-7	-9	-9	-9	-9	-2	-2	-3	-4
18000	-4	-2	3	0	-1	-14	-10	-10	-10	-10	-4	-4	-4	-6
ALAMEDA NAS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	4	3	0	3	2	-2	-3	-3	-3	-3	-5	-3	0	-3
10000	-1	1	0	2	0	-5	-7	-7	-7	-7	-1	-2	-1	-4
18000	-5	0	1	0	-1	-10	-12	-12	-12	-12	-2	-4	-4	-5
ALBERT	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	1	0	-2	-1	-1	-6	-7	-7	-7	-7	-2	0	2	0
10000	3	1	0	2	1	-4	-5	-5	-5	-5	-3	-1	0	-2
18000	-1	0	0	2	0	-8	-10	-10	-10	-10	-1	-3	-1	-4
ALBERT	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	0	0	-2	-1	-1	-4	-7	-7	-7	-7	0	0	2	0
10000	3	1	1	3	2	-2	-4	-4	-4	-4	-4	-2	-2	-4
18000	4	0	0	2	1	-5	-7	-7	-7	-7	-7	-3	-2	-5
ALBERT	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	0	0	-4	0	-1	-7	-8	-8	-8	-8	0	0	4	0
10000	1	-1	-3	0	-1	-7	-8	-8	-8	-8	-2	0	3	0
18000	1	-2	-5	-2	-2	-10	-12	-12	-12	-12	-3	0	3	0
ALBERT	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	0	0	-4	0	-2	-7	-8	-8	-8	-8	0	0	4	0
10000	1	-1	-4	-1	-2	-7	-9	-9	-9	-9	-1	1	3	0
18000	0	-3	-5	-3	-3	-10	-12	-12	-12	-12	-3	1	4	1

* HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 **--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN DENOTES TAILWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN PFBT	EQUIVALENT HEADWIND										STANDARD DEVIATION			
	DIRECT					MEAN IN D SO					PERCENT			
	JAN	APR	JUL	OCT	00450	A75	AB5	JAN	APR	JUL	OCT	00450	A75	AB5
ALEUT														
SCOO	0	0	0	-1	-1	-6	-7	0	0	0	1	0	-5	-6
10000	-4	-2	-3	-3	-4	-10	-11	3	1	3	3	2	-3	-5
18000	-8	-4	-4	-5	-6	-15	-17	6	2	3	3	3	-5	-7
ALEUT														
SCOO	-1	-1	-3	-1	-2	-7	-8	1	0	3	1	1	-3	-4
10000	1	0	-1	-1	-1	-6	-7	-2	0	1	0	0	-5	-6
18000	1	-2	-2	-2	-2	-8	-10	-4	0	1	0	-1	-7	-9
ALEUT														
SCOO	0	0	-4	-1	-2	-7	-9	-1	0	4	1	0	-4	-5
10000	0	-2	-4	-2	-2	-8	-9	-1	1	4	1	1	-4	-5
18000	0	-4	-6	-4	-4	-11	-13	-2	1	4	2	1	-6	-8
ALEUT														
SCOO	0	1	-3	0	0	-6	-8	-1	-1	3	-1	0	-6	-8
10000	2	0	-3	0	0	-6	-8	-2	0	3	-1	0	-6	-8
18000	1	0	-5	0	-1	-10	-12	-4	-1	4	0	0	-9	-11
ALEUT														
SCOO	-1	1	0	1	0	-5	-8	1	-1	0	-1	0	-7	-8
10000	-2	0	-3	-2	-2	-10	-11	2	0	3	1	1	-6	-7
18000	-7	-4	-4	-3	-5	-16	-19	5	2	3	1	2	-8	-11
ALEUT														
SCOO	0	0	-3	-1	-1	-7	-8	-1	0	2	0	0	-5	-7
10000	3	1	1	3	2	-3	-4	-4	-2	-1	-4	-3	-9	-10
18000	4	1	0	3	2	-5	-7	-6	-3	-2	-5	-5	-12	-14
ALEUT														
SCOO	0	3	4	3	2	-2	-3	-2	-4	-4	-3	-4	-9	-10
10000	-3	0	3	2	0	-5	-6	-3	-3	-3	-4	-4	-9	-10
18000	-7	-6	1	-1	-3	-11	-13	-13	-4	-3	-5	-7	-14	-16
ALEUT														
SCOO	10	9	1	5	6	1	0	-10	-9	-2	-5	-7	-12	-13
10000	10	9	3	3	6	1	0	-10	-9	-3	-3	-7	-12	-13
18000	2	3	4	5	3	-1	-2	-3	-3	-4	-5	-4	-9	-10
ALEUT														
SCOO	2	0	-3	-3	-1	-5	-6	-3	0	3	3	0	-3	-4
10000	1	2	-2	-1	0	-4	-5	-2	-1	2	2	0	-4	-4
18000	0	0	-1	0	-1	-4	-5	0	0	0	0	0	-4	-5

* HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**--DEFINITE ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00450	A75	AB5	JAN	APR	JUL	OCT	00450	A75	AB5		
ANDERSON AFB	TO															
5000	3	-1	0		1	-2	-3	-5	-3	1	0	-2	-6	-7	5	1771 N.M.I.
10000	3	1	2		2	3	-1	-3	-4	-1	-2	-3	-6	-7	4	5
18000	4	3	3		3	0	-1	-5	-3	-2	-2	-3	-7	-8	6	5
ANDERSON AFB	TO															
5000	13	10	0		6	0	-2	-13	-9	0	0	-6	-12	-14	7	1205 N.M.I.
10000	11	9	3		6	1	0	-11	-8	-3	-3	-7	-12	-13	7	5
18000	5	4	5		5	0	0	-5	-4	-5	-6	-6	-10	-11	7	7
ANDERSON AFB	TO															
5000	-13	-15	-10		-8	-12	-17	13	15	11	9	12	7	6	6	1024 N.M.I.
10000	-10	-8	-9		-10	-10	-15	11	9	10	10	10	6	4	7	6
18000	-11	-3	-8		-7	-8	-15	11	3	8	9	7	2	0	9	7
ANDERSON AFB	TO															
5000	4	5	2		5	4	0	-5	-5	-2	-5	-5	-9	-10	6	1826 N.M.I.
10000	3	5	1		1	2	-1	-4	-6	-2	-1	-4	-8	-9	6	5
18000	-8	-5	3		1	-2	-10	4	3	-3	-1	0	-5	-6	7	7
ANDERSON AFB	TO															
5000	0	3	4		3	2	-4	-1	-4	-4	-3	-4	-9	-10	8	1414 N.M.I.
10000	-7	0	2		1	-1	-7	1	-2	-3	-2	-2	-8	-9	9	7
18000	-18	-13	0		-4	-8	-17	0	5	-1	0	0	-6	-7	11	10
ANDERSON AFB	TO															
5000	6	8	6		5	6	0	-6	-8	-6	-5	-7	-12	-14	9	702 N.M.I.
10000	7	5	5		5	5	0	-8	-7	-5	-5	-7	-13	-14	9	8
18000	11	2	3		4	4	-2	-15	-4	-4	-4	-7	-14	-16	12	10
ANDERSON AFB	TO															
5000	1	4	4		5	3	-1	-2	-5	-4	-5	-5	-10	-11	8	1231 N.M.I.
10000	0	10	3		2	3	-2	-2	-10	-4	-2	-5	-11	-12	8	7
18000	-9	-8	2		0	-3	-11	1	4	-3	-1	0	-6	-8	10	9
ANDERSON AFB	TO															
5000	-2	1	3		0	0	-4	1	-2	-3	-1	-2	-6	-7	7	1733 N.M.I.
10000	-11	-2	1		-1	-3	-9	5	0	-2	0	0	-5	-6	8	7
18000	-24	-17	-1		-8	-13	-24	6	9	0	4	4	-2	-3	10	9
ANDERSON AFB	TO															
5000	-13	-15	-11		-8	-12	-16	13	15	11	9	12	8	7	6	1373 N.M.I.
10000	-11	-8	-10		-10	-14	-15	11	9	11	10	10	6	5	5	5
18000	-13	-5	-9		-10	-15	-16	13	5	9	10	5	4	2	8	6

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.*														STANDARD DEVIATION				
	DIRECT				RETURN										JAN APR JUL OCT				
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85					
ANDEFSON AFB	TO															1638 N.M.I.			
5000	0	4	5	3	3	-2	-3	-2	-4	-5	-3	-4	-9	-10	8 7 7 7				
10000	-2	0	3	2	0	-5	-6	-5	-3	-3	-4	-4	-9	-11	9 8 7 8				
18000	-7	-6	1	-1	-3	-11	-13	-13	-13	-4	-3	-5	-7	-14	11 11 9 10				
ANDEFSON AFB	TO															1391 N.M.I.			
5000	2	0	-4	-4	-2	-6	-7	-7	-3	0	4	4	0	-3	5 5 5 5				
10000	0	0	-3	-1	-1	-5	-6	-6	0	0	3	1	0	-2	5 5 5 5				
18000	-1	0	-2	-1	-1	-5	-7	-7	0	0	1	1	0	-4	7 5 7 6				
ANDEFSON AFB	TO															1551 N.M.I.			
5000	-1	2	4	1	1	-3	-4	-4	0	-3	-4	-2	-3	-8	7 7 7 7				
10000	-9	-1	2	0	-2	-8	-10	-10	3	-1	-2	-1	-1	-6	8 8 7 8				
18000	-21	-15	0	-6	-10	-19	-22	-22	3	7	-1	2	2	-4	10 9 8 9				
ANDEFSON AFB	TO															1670 N.M.I.			
5000	0	2	3	3	1	-2	-3	-3	0	-3	-3	-3	-3	-7	7 6 7 6				
10000	-8	3	1	0	-1	-7	-8	-8	3	-5	-2	0	-1	-7	8 7 8 7				
18000	-21	-16	1	-4	-10	-19	-21	-21	8	10	-1	2	4	-2	9 8 7 8				
ANDEFSON AFB	TO															1489 N.M.I.			
5000	2	4	3	5	3	0	-2	-2	-3	-5	-3	-5	-5	-9	7 6 7 6				
10000	0	7	2	1	2	-2	-3	-3	-3	-8	-3	-2	-5	-10	7 6 8 7				
18000	-10	-8	2	0	-4	-11	-12	-12	4	4	-3	-1	0	-5	8 8 7 8				
ANDEFSON AFB	TO															1347 N.M.I.			
5000	1	4	5	4	3	-1	-2	-2	-3	-5	-5	-4	-5	-10	8 7 7 7				
10000	-2	1	3	3	1	-4	-5	-5	-3	-3	-3	-4	-4	-9	9 8 7 8				
18000	-7	-6	2	0	-3	-10	-12	-12	-11	-3	-3	-4	-6	-13	11 11 9 10				
ANDEFSON AFB	TO															999 N.M.I.			
5000	6	2	-4	-4	0	-6	-7	-7	-6	-2	4	4	0	-6	6 6 7 7				
10000	1	2	-2	0	0	-4	-5	-5	-2	-2	2	0	-1	-4	5 5 5 6				
18000	1	2	0	1	0	-3	-5	-5	-3	-2	0	-1	-2	-7	7 6 7 7				
ANDEFSON AFB	TO															1295 N.M.I.			
5000	-6	-11	-8	-8	-9	-13	-14	-14	5	11	8	8	3	2	6 6 6 6				
10000	-3	-3	-5	-7	-5	-9	-10	-10	2	3	5	7	4	0	7 6 5 6				
18000	-3	4	-3	-3	-2	-7	-9	-9	1	-4	3	2	0	-5	9 8 7 8				
ANDREWS AFB	TO															1784 N.M.I.			
5000	-11	-8	-6	-8	-9	-14	-16	-16	10	7	6	7	7	2	9 9 6 8				
10000	-24	-15	-12	-14	-16	-23	-25	-25	22	13	12	13	14	8	10 10 7 9				
18000	-40	-27	-21	-28	-28	-39	-42	-42	34	23	20	24	24	15	15 14 9 14				

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS*														STANDARD DEVIATION			
	DIRECT					RETURN												
	JAN	APR	JUL	OCT	**450	A75	A85	JAN	APR	JUL	OCT	**450	A75	A85	JAN	APR	JUL	OCT
ANDREWS AFB	1298 N.MI.																	
5000	-12	-10	-7	-7	-9	-16	-17	11	9	7	7	8	2	0	11	10	7	9
10000	-26	-19	-9	-12	-16	-25	-27	25	18	9	11	15	7	5	11	11	8	10
18000	-45	-32	-13	-25	-27	-42	-46	40	28	13	22	23	12	10	17	16	9	15
ANDREWS AFB	1063 N.MI.																	
5000	-13	-10	-6	-6	-9	-16	-17	12	9	6	6	7	1	0	11	11	7	9
10000	-27	-19	-8	-11	-16	-25	-28	25	18	8	10	14	6	4	12	12	8	11
18000	-46	-32	-11	-25	-27	-43	-47	41	28	10	21	22	10	8	17	17	9	16
ANDREWS AFB	235 N.MI.																	
5000	-1	0	0	-1	-1	-9	-11	-1	0	0	0	-1	-9	-11	14	13	9	13
10000	-3	-5	-1	-2	-3	-12	-15	-5	0	0	1	-1	-10	-13	16	16	10	14
18000	-15	-5	-1	-4	-7	-21	-25	-6	-7	0	1	-3	-16	-19	22	22	12	21
ANDREWS AFB	539 N.MI.																	
5000	-15	-11	-7	-9	-11	-19	-21	13	10	7	8	9	1	0	14	13	9	11
10000	-29	-20	-14	-13	-19	-29	-32	27	18	13	12	16	7	4	15	15	11	14
18000	-48	-32	-20	-29	-31	-47	-51	42	28	19	24	26	14	11	21	21	12	21
ANDREWS AFB	1367 N.MI.																	
5000	-7	-5	-4	-6	-6	-12	-14	5	3	4	4	4	-2	-4	10	10	8	10
10000	-15	-9	-11	-10	-12	-19	-21	11	7	9	8	8	1	0	11	11	9	10
18000	-25	-17	-17	-17	-19	-29	-32	13	11	13	10	11	2	0	16	15	11	15
ANDREWS AFB	1219 N.MI.																	
5000	-12	-9	-5	-5	-8	-14	-16	11	8	5	4	6	0	0	10	10	7	9
10000	-23	-17	-6	-8	-13	-22	-24	21	15	5	7	11	3	2	11	11	7	10
18000	-41	-29	-5	-20	-23	-38	-41	35	23	3	17	17	5	3	16	15	8	14
ANDREWS AFB	1734 N.MI.																	
5000	-12	-6	-5	-9	-8	-15	-16	10	5	5	8	6	0	0	10	9	7	9
10000	-22	-13	-13	-15	-16	-23	-25	20	12	13	14	14	8	6	10	10	8	9
18000	-35	-23	-20	-26	-26	-36	-38	29	19	18	21	21	12	10	14	14	10	14
ANDREWS AFB	690 N.MI.																	
5000	-11	-8	-4	-4	-7	-14	-16	10	7	4	3	5	-1	-2	12	11	8	10
10000	-21	-16	-6	-7	-12	-22	-24	17	13	6	6	10	1	0	13	13	9	12
18000	-39	-25	-7	-20	-21	-37	-41	29	17	6	16	15	4	1	18	18	10	17
ANDREWS AFB	1061 N.MI.																	
5000	-13	-9	-5	-5	-8	-15	-17	12	9	5	5	7	1	0	11	10	7	9
10000	-24	-18	-7	-9	-14	-23	-26	22	16	6	8	12	4	2	11	11	8	11
18000	-43	-30	-6	-22	-24	-40	-44	37	24	5	18	19	6	4	17	16	9	16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
ANDREWS AFB	1222 N.M.I.																	
5000	-14	-9	-7	-9	-10	-17	-19	12	8	6	8	8	1	0	11	11	8	10
10000	-26	-17	-14	-15	-18	-25	-28	24	15	13	14	16	8	6	12	12	9	11
18000	-43	-29	-22	-29	-30	-42	-46	37	25	21	25	26	15	13	17	17	10	17
ANDREWS AFB	1986 N.M.I.																	
5000	-9	-7	-5	-4	-7	-11	-13	8	7	5	4	5	1	0	8	8	5	7
10000	-21	-16	-9	-11	-14	-21	-23	19	14	9	10	12	6	5	9	9	7	8
18000	-40	-29	-15	-23	-26	-38	-40	35	25	15	20	22	13	11	14	13	8	13
ANDREWS AFB	891 N.M.I.																	
5000	-13	-10	-5	-5	-3	-16	-18	12	9	5	5	7	0	-1	11	11	8	10
10000	-25	-18	-7	-9	-14	-24	-27	23	17	7	8	13	4	2	12	12	8	12
18000	-44	-30	-8	-23	-25	-41	-45	38	25	7	19	20	7	5	18	17	10	17
ANDREWS AFB	544 N.M.I.																	
5000	-11	-8	-4	-4	-7	-15	-17	10	7	4	4	6	-1	-3	12	12	8	11
10000	-22	-17	-7	-8	-13	-23	-26	18	14	7	6	10	2	0	14	14	9	13
18000	-41	-27	-9	-22	-23	-40	-44	32	19	8	18	17	5	2	20	20	11	19
ANDREWS AFB	1499 N.M.I.																	
5000	-12	-9	-6	-6	-8	-14	-16	11	8	6	6	7	2	0	10	9	6	8
10000	-25	-18	-8	-11	-15	-24	-26	23	17	7	10	13	6	4	10	10	7	10
18000	-44	-31	-11	-23	-26	-40	-44	39	28	11	20	22	11	9	15	15	8	14
ANDREWS AFB	242 N.M.I.																	
5000	-7	-5	-2	-3	-5	-13	-15	5	3	2	3	3	-4	-6	14	13	9	12
10000	-15	-12	-5	-6	-9	-19	-22	7	8	4	5	5	-3	-5	16	16	10	14
18000	-32	-18	-7	-18	-17	-33	-37	15	6	5	11	8	-3	-6	22	22	12	21
ANDREWS AFB	521 N.M.I.																	
5000	-15	-11	-6	-8	-10	-18	-20	14	10	6	7	8	1	0	13	13	9	11
10000	-29	-21	-11	-12	-18	-28	-31	28	20	11	11	16	7	5	14	14	10	13
18000	-49	-33	-16	-28	-30	-47	-51	45	28	15	25	26	12	9	21	21	12	20
ANDREWS AFB	1301 N.M.I.																	
5000	-12	-9	-7	-8	-9	-16	-17	11	9	7	8	8	2	1	10	10	7	9
10000	-26	-18	-11	-13	-17	-25	-28	24	16	11	12	15	7	6	11	11	8	11
18000	-45	-31	-18	-28	-29	-43	-46	40	27	17	24	25	14	12	17	16	10	16
ANDREWS AFB	1115 N.M.I.																	
5000	-13	-10	-6	-6	-9	-16	-17	12	9	6	5	7	1	0	11	10	7	9
10000	-26	-19	-7	-10	-15	-25	-27	24	17	7	9	13	5	3	11	11	8	11
18000	-45	-31	-9	-23	-26	-41	-45	40	26	3	20	21	9	6	17	16	9	16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.*												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
ANDREWS AFB																		
TO FORT HUACHUCA																		
5000	-10	-8	-6	-5	-8	-13	-15	9	8	6	5	6	1	0	1688 N.MI.			
10000	-24	-18	-8	-10	-15	-23	-25	22	17	7	10	13	6	4	9	9	6	8
18000	-42	-31	-12	-23	-26	-39	-42	37	27	11	19	21	11	9	15	14	8	13
ANDREWS AFB																		
TO FORT KNOX																		
5000	-15	-11	-7	-8	-10	-19	-21	14	10	7	8	9	1	0	432 N.MI.			
10000	-31	-22	-12	-12	-19	-30	-33	29	21	12	11	17	7	5	14	13	9	11
18000	-50	-34	-17	-30	-31	-48	-53	46	30	17	26	27	14	11	15	15	10	14
ANDREWS AFB																		
TO FORT LEAVENWORTH																		
5000	-15	-11	-7	-9	-11	-18	-20	14	10	7	8	9	2	0	841 N.MI.			
10000	-29	-20	-12	-14	-19	-28	-31	28	19	12	13	17	8	6	13	12	8	10
18000	-48	-32	-19	-30	-31	-46	-50	44	29	18	26	27	15	12	13	13	10	12
ANDREWS AFB																		
TO FORT RUCKER																		
5000	-11	-8	-4	-4	-7	-14	-16	9	7	4	3	5	-1	-3	620 N.MI.			
10000	-21	-16	-6	-7	-12	-22	-25	17	13	6	6	10	1	0	12	11	8	11
18000	-39	-25	-7	-21	-21	-37	-41	29	17	6	16	15	3	1	13	13	9	13
ANDREWS AFB																		
TO FORT STILL																		
5000	-14	-10	-7	-7	-10	-17	-18	12	10	7	7	8	2	0	1063 N.MI.			
10000	-27	-20	-9	-12	-17	-26	-29	26	18	9	11	15	6	5	11	11	8	9
18000	-47	-32	-13	-26	-28	-44	-48	42	28	12	22	24	12	9	12	12	9	11
ANDREWS AFB																		
TO FORT WOLTERS																		
5000	-13	-10	-6	-6	-9	-16	-17	12	9	6	6	7	1	0	1091 N.MI.			
10000	-27	-19	-8	-11	-16	-25	-28	25	18	8	10	14	6	4	11	11	7	9
18000	-46	-32	-11	-25	-27	-43	-47	41	28	10	21	22	10	8	12	12	8	11
ANDREWS AFB																		
TO FROBISHER																		
5000	0	0	1	2	0	-6	-7	-1	-1	-2	-3	-2	-9	-10	1525 N.MI.			
10000	0	0	0	1	0	-6	-8	-5	-2	-2	-4	-4	-11	-12	10	10	8	9
18000	2	0	0	1	0	-9	-11	-15	-6	-4	-10	-9	-19	-22	11	11	9	10
ANDREWS AFB																		
TO GEN MITCHELL																		
5000	-14	-10	-7	-8	-10	-18	-20	13	9	7	8	8	1	0	555 N.MI.			
10000	-28	-19	-14	-13	-18	-29	-31	26	17	13	11	16	6	4	14	13	9	11
18000	-47	-31	-20	-28	-30	-46	-50	39	27	19	23	25	13	9	15	15	11	15
ANDREWS AFB																		
TO HILL AFB																		
5000	-10	-8	-5	-7	-8	-13	-15	9	7	5	7	6	1	0	1610 N.MI.			
10000	-24	-16	-12	-13	-16	-24	-25	22	14	11	13	14	8	6	9	9	6	8
18000	-42	-28	-20	-28	-29	-40	-43	36	24	19	24	24	15	13	10	10	8	9

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 **A--DIFNOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 *MINUS SIGN DENOTES TAILWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION				
	DIRECT						RETURN						JAN APR JUL OCT				
	JAN	APR	JUL	OCT	00450	075	085	JAN	APR	JUL	OCT	00450					075
ANDREWS AFB																	
TO																	
HOMESTEAD AFB																	
5000	-5	-4	-2	-2	-4	-10	-12	4	3	2	2	2	3	-5	10	10	221 N.M.I.
10000	-7	-7	-3	-3	-5	-13	-15	3	4	2	3	2	-4	-6	12	12	8 11
18000	-17	-10	-4	-10	-10	-20	-23	2	0	3	5	2	-6	-9	16	16	9 15
ANDREWS AFB																	
TO																	
HUNTER AAF																	
5000	-8	-5	-2	-3	-5	-12	-14	6	4	2	2	3	-3	-5	12	12	458 N.M.I.
10000	-15	-12	-4	-5	-9	-18	-21	9	8	4	4	5	-2	-4	14	14	9 13
18000	-32	-19	-6	-18	-17	-33	-36	17	9	5	12	9	-1	-4	20	20	11 19
ANDREWS AFB																	
TO																	
MUNTSVILLE																	
5000	-14	-17	-5	-6	-9	-17	-19	13	9	5	6	7	0	-1	13	12	539 N.M.I.
10000	-27	-20	-9	-10	-15	-27	-30	25	18	9	9	14	5	3	14	14	8 11
18000	-47	-31	-12	-26	-27	-44	-49	41	25	12	22	22	10	7	20	20	10 13
ANDREWS AFB																	
TO																	
JACKSONVILLE																	
5000	-8	-5	-2	-2	-5	-12	-14	6	4	2	2	3	-3	-5	12	11	557 N.M.I.
10000	-14	-12	-4	-5	-9	-18	-20	8	8	3	4	5	-2	-4	14	13	8 11
18000	-30	-18	-5	-16	-16	-30	-34	15	8	4	10	8	-2	-4	19	19	9 13
ANDREWS AFB																	
TO																	
KEY WEST																	
5000	-6	-4	-2	-2	-4	-10	-12	4	4	3	2	3	-2	-4	10	10	892 N.M.I.
10000	-9	-7	-3	-4	-6	-13	-15	4	4	3	3	3	-3	-4	12	11	7 9
18000	-19	-11	-4	-11	-11	-21	-24	5	2	3	6	3	-5	-7	16	16	7 10
ANDREWS AFB																	
TO																	
LAMSON AFB																	
5000	-12	-7	-5	-5	-8	-14	-15	11	7	5	8	7	2	1	9	8	1904 N.M.I.
10000	-24	-14	-12	-15	-16	-23	-25	22	13	12	14	14	8	7	9	9	6 8
18000	-38	-25	-22	-29	-29	-38	-41	33	22	20	24	24	15	13	14	14	9 14
ANDREWS AFB																	
TO																	
LITTLE ROCK																	
5000	-14	-11	-6	-7	-10	-17	-19	13	10	6	6	8	1	0	12	12	770 N.M.I.
10000	-28	-20	-10	-11	-17	-27	-30	27	19	10	10	15	6	4	13	13	8 10
18000	-48	-33	-13	-27	-29	-45	-49	43	28	12	23	24	11	8	19	19	9 13
ANDREWS AFB																	
TO																	
LOCKPORT																	
5000	-14	-12	-7	-9	-11	-20	-22	15	11	7	8	9	1	0	14	14	287 N.M.I.
10000	-32	-23	-14	-12	-20	-31	-34	30	21	14	11	18	8	5	16	16	9 12
18000	-51	-35	-19	-30	-32	-50	-54	46	31	18	25	28	14	10	23	23	11 18
ANDREWS AFB																	
TO																	
LONG AFB																	
5000	7	5	6	6	6	-2	-4	-10	-7	-7	-7	-8	-16	-18	14	13	626 N.M.I.
10000	15	10	9	11	11	1	0	-21	-14	-13	-14	-15	-25	-27	16	15	10 11
18000	26	13	12	19	16	4	0	-39	-22	-17	-27	-25	-40	-44	22	21	11 14

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

APR--DEFINIES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES TAILWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN CENTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN PDS.	MONTHLY AVERAGE RETURN												STANDARD DEVIATION			
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ANDREWS AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-10	-8	-5	-5	-7	-13	-14	9	7	5	5	0	1	0	9	1739 N.M.I.
10000	-23	-17	-9	-11	-15	-22	-24	21	16	9	10	13	7	3	10	0 7
18000	-42	-30	-14	-24	-26	-39	-42	37	27	14	20	22	13	11	15	14 0 13
ANDREWS AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-14	-11	-6	-7	-10	-17	-19	13	10	6	6	0	1	0	13	000 N.M.I.
10000	-28	-20	-10	-11	-17	-27	-30	26	19	10	10	15	6	4	14	14 0 13
18000	-49	-32	-13	-27	-24	-44	-49	43	28	13	23	24	11	9	20	19 11 19
ANDREWS AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-8	-7	-3	-2	-5	-10	-12	7	7	3	2	4	0	-1	0	1639 N.M.I.
10000	-15	-12	-3	-4	-4	-15	-17	13	10	3	4	6	1	0	9	0 5 7
18000	-31	-21	-1	-14	-17	-28	-31	24	16	3	11	11	2	0	12	12 7 11
ANDREWS AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-14	-9	-7	-9	-10	-19	-20	12	8	7	8	0	1	0	13	015 N.M.I.
10000	-27	-19	-14	-14	-14	-24	-30	24	16	13	13	16	7	3	13	14 0 13
18000	-44	-24	-21	-24	-33	-44	-47	37	25	23	23	25	13	10	20	19 12 19
ANDREWS AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-13	-8	-6	-9	-9	-19	-20	11	7	9	9	7	1	0	11	1197 N.M.I.
10000	-24	-15	-14	-15	-17	-25	-27	22	14	14	13	15	7	6	12	12 0 10
18000	-40	-27	-22	-28	-29	-41	-44	33	22	20	23	23	13	10	17	17 11 17
ANDREWS AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-9	-7	-5	-5	-7	-12	-13	8	7	5	5	6	1	0	0	1010 N.M.I.
10000	-22	-16	-10	-12	-15	-22	-24	20	14	10	11	13	7	5	10	0 6 7
18000	-41	-29	-17	-25	-27	-39	-42	35	25	16	21	22	14	12	15	14 0 13
ANDREWS AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-12	-9	-6	-6	-7	-14	-14	11	8	4	4	6	0	-1	11	039 N.M.I.
10000	-23	-17	-6	-8	-11	-23	-25	20	15	6	7	11	3	1	12	11 7 10
18000	-41	-24	-6	-21	-23	-39	-42	34	21	5	17	17	5	2	10	17 10 17
ANDREWS AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-7	-5	-3	-2	-5	-11	-16	6	2	3	1	2	-3	-7	13	274 N.M.I.
10000	-15	-10	-7	-4	-11	-19	-22	6	4	4	1	3	-4	-8	16	10 12 12
18000	-26	-20	-10	-12	-17	-32	-36	4	9	6	0	4	-8	-12	23	23 14 23
ANDREWS AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-4	-4	-2	-2	-4	-11	-12	4	3	2	1	2	-4	-5	11	601 N.M.I.
10000	-10	-9	-3	-4	-7	-15	-17	4	5	2	3	3	-4	-6	13	0 10
18000	-22	-13	-4	-12	-12	-24	-28	7	1	3	7	4	-5	-8	10	10 10 17

HEADINGS--COMPUTED FOR A 120-KT AIRSPEED.
 000--DEFINITE ANNUAL EQUIVALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN DEFINITE HEADINGS.

[illegible]

MEANINGS--COMPUTED FOR A 120-AT AIRSPEED.
 ---UNOTES APPROX EQUIVALENT MEANINGS FOR INDICATED 600 CENT ALL INDICATES.
 MINUS SIGN DENOTES MEANINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00450	A75	A05	JAN	APR	JUL	OCT	00450	A75	A05		
ATTU																
5000	-8	-9	-6	-13	-9	-17	-19	6	7	5	11	7	6	-2	1391 N.M.I.	12
10000	-16	-13	-7	-20	-14	-23	-25	14	11	7	17	11	4	2	11 9 11	12
18000	-27	-21	-11	-29	-22	-34	-37	20	17	9	23	16	5	2	12 9 12	17
															16 13 16	16
ATTU																
5000	5	4	9	3	6	-2	-4	-7	-5	-3	-10	-8	-17	-19	726 N.M.I.	15
10000	11	7	9	14	10	0	-2	-13	-8	-11	-16	-12	-23	-25	13 11 13	16
18000	14	13	14	18	14	1	-1	-19	-16	-17	-21	-19	-32	-35	15 13 15	22
															17 17 19	19
ATTU																
5000	0	2	4	3	3	-3	-5	-1	-2	-6	-4	-4	-10	-12	1393 N.M.I.	11
10000	6	2	6	6	5	-2	-4	-8	-4	-7	-9	-7	-15	-17	9 8 9	13
18000	9	6	7	7	7	-2	-4	-14	-9	-9	-12	-11	-22	-24	11 10 11	17
															15 13 15	15
ATTU																
5000	1	2	7	4	3	-3	-5	-2	-3	-7	-5	-5	-12	-13	1288 N.M.I.	11
10000	7	3	6	7	5	-2	-4	-10	-4	-7	-9	-8	-16	-18	10 9 10	13
18000	11	7	8	10	8	-1	-4	-16	-11	-11	-14	-13	-24	-27	12 10 12	18
															16 14 16	16
ATTU																
5000	1	2	5	3	2	-2	-4	-2	-2	-5	-4	-4	-9	-11	1754 N.M.I.	10
10000	7	2	5	6	4	-2	-3	-10	-4	-6	-8	-7	-14	-16	8 7 8	12
18000	13	7	9	11	9	0	-1	-18	-11	-12	-14	-14	-24	-26	10 9 10	16
															14 12 14	14
ATTU																
5000	4	3	8	6	5	-2	-3	-5	-4	-8	-7	-7	-14	-16	1194 N.M.I.	12
10000	9	4	7	10	7	0	-3	-11	-5	-8	-11	-9	-18	-20	11 9 11	14
18000	14	9	11	13	11	0	-2	-19	-12	-14	-16	-16	-27	-30	12 11 12	19
															15 15 17	17
ATTU																
5000	-4	0	-4	-1	-3	-10	-12	-1	-2	3	-1	0	-8	-10	1536 N.M.I.	13
10000	-2	0	-1	3	0	-7	-9	-4	-4	0	-7	-4	-12	-13	13 11 11	12
18000	-6	1	6	4	1	-8	-10	-9	-12	-9	-14	-12	-21	-23	12 11 9 10	16
															14 11 13	13
ATTU																
5000	-9	-9	-6	-13	-10	-17	-19	7	7	6	12	7	0	-1	1479 N.M.I.	11
10000	-18	-14	-8	-20	-15	-24	-26	15	11	7	18	12	4	2	11 9 11	12
18000	-29	-23	-11	-30	-23	-35	-38	21	17	8	24	17	6	4	12 9 12	16
															15 12 15	15
ATTU																
5000	0	1	5	1	1	-4	-6	-1	-1	-6	-2	-3	-9	-11	1471 N.M.I.	11
10000	3	2	7	5	4	-2	-4	-6	-3	-7	-6	-6	-13	-15	9 8 9	12
18000	7	5	6	6	6	-3	-6	-11	-8	-8	-9	-9	-19	-22	10 9 10	16
															14 13 14	14

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PFR PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS														STANDARD DEVIATION			
	DIRECT							RETURN										
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85				
ATTU																		
		TO																1747 N.M.I.
5000	-11	-9	-6	-12	-10	-17	-18	8	8	6	11	8	1	0				11 10 8 10
10000	-21	-14	-8	-20	-16	-24	-26	17	11	7	17	12	5	3				11 11 8 11
18000	-33	-25	-11	-31	-25	-37	-39	23	18	9	25	18	8	5				15 14 11 14
BAGHDAD																		
5000	4	7	9	1	5	0	0	-4	-7	-9	-1	-6	-10	-11				1747 N.M.I.
10000	11	9	4	4	6	2	0	-12	-10	-4	-4	-8	-13	-14				6 6 6 5
18000	29	21	4	10	14	5	4	-32	-24	-5	-11	-17	-29	-31				7 7 6 6
																		11 10 6 8
BAGHDAD																		
5000	5	6	10	5	6	0	0	-5	-6	-10	-5	-7	-13	-14				519 N.M.I.
10000	8	10	7	5	7	0	-1	-11	-11	-7	-6	-9	-16	-18				8 9 8 8
18000	15	16	8	1	9	0	-2	-25	-22	-9	-4	-14	-26	-29				11 11 9 10
																		17 14 10 11
BAGHDAD																		
5000	5	8	7	2	5	1	0	-5	-7	-7	-2	-6	-10	-11				1293 N.M.I.
10000	13	11	4	5	8	2	1	-14	-12	-4	-6	-9	-15	-17				6 7 6 6
18000	32	26	7	13	18	8	6	-36	-29	-8	-14	-21	-33	-36				8 8 7 7
																		13 11 8 9
BAGHDAD																		
5000	4	6	1	1	2	-1	-2	-3	-6	-1	-1	-3	-7	-8				1522 N.M.I.
10000	11	10	3	6	7	2	1	-11	-10	-3	-6	-8	-13	-14				6 6 5 5
18000	31	27	10	17	20	12	10	-32	-28	-10	-17	-21	-31	-34				7 7 6 7
																		12 10 8 8
BAGHDAD																		
5000	4	7	2	1	3	0	-1	-3	-7	-2	-1	-4	-7	-8				1702 N.M.I.
10000	12	11	3	6	7	2	1	-13	-11	-3	-6	-9	-14	-15				6 5 5 4
18000	32	27	7	15	19	10	8	-34	-28	-8	-16	-21	-32	-34				7 7 6 6
																		11 10 7 8
BAGHDAD																		
5000	5	7	1	4	4	-1	-3	-5	-6	-1	-3	-4	-10	-12				363 N.M.I.
10000	16	15	5	10	11	3	1	-17	-15	-5	-10	-12	-20	-22				9 9 8 8
18000	29	26	15	21	22	11	9	-32	-28	-16	-21	-24	-35	-38				12 11 10 11
																		18 16 12 13
BAGHDAD																		
5000	5	7	5	4	5	0	0	-5	-7	-5	-3	-5	-10	-12				877 N.M.I.
10000	15	13	5	8	10	3	2	-16	-14	-5	-8	-11	-18	-20				7 8 7 7
18000	33	29	12	16	20	11	9	-36	-31	-12	-17	-23	-35	-38				9 9 8 9
																		15 13 9 10
BAGHDAD																		
5000	0	-3	-12	1	-3	-8	-10	0	4	12	-1	2	-1	-2				1624 N.M.I.
10000	-4	-4	-8	0	-4	-9	-10	4	4	8	0	3	0	-1				5 5 6 5
18000	-9	-5	3	-1	-3	-9	-11	7	5	-3	1	1	-3	-4				6 5 7 5
																		9 8 6 6

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

+MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION			
	DIRECT						RETURN									
	JAN	APR	JUL	OCT	AUG	AUG	JAN	APR	JUL	OCT	AUG	AUG	JAN	APR	JUL	OCT
BANGKOK																
5000	-1	-2	-3	1	-2	-7	2	3	2	-1	1	-3	6	6	868 N.M.I.	
10000	-7	-5	0	-5	-11	-12	7	7	5	0	4	-1	7	7	8	7
18000	-15	-9	2	0	-5	-13	13	8	-2	0	3	-3	11	10	8	8
BANGKOK																
5000	-1	-2	8	-6	-1	-7	1	2	-8	6	0	-4	5	5	1160 N.M.I.	
10000	0	2	6	0	1	-3	0	-1	-6	0	-2	-7	7	5	8	7
18000	2	2	-3	-2	-1	-7	-2	-2	3	3	0	-5	8	8	7	6
BANGKOK																
5000	5	0	-18	0	-1	-10	-4	0	13	0	0	-4	5	5	1294 N.M.I.	
10000	3	2	-11	1	0	-7	-2	-2	11	-1	0	-4	5	5	7	5
18000	5	3	3	4	0	-1	-5	-2	-3	-5	-4	-9	8	7	7	6
BANGKOK																
5000	1	2	13	-4	2	-3	0	-2	-12	4	-2	-9	6	6	457 N.M.I.	
10000	3	4	7	3	4	-1	-3	-3	-7	-2	-4	-9	8	6	9	8
18000	1	0	-2	-1	-1	-7	-1	0	2	1	0	-6	10	9	9	8
BANGKOK																
5000	0	-2	5	-5	-1	-5	0	3	-5		0	-4	5	4	4	7
10000	-1	0	3	-1	0	-4	1	0	-3		-1	-4	6	4	6	6
18000	-1	-1	-5	-7	-4	-9	1	1	5	7	3	-1	7	6	7	6
BANGKOK																
5000	3	0	-2	-4	-1	-5	-2	1	2	5	1	-2	6	4	5	1260 N.M.I.
10000	2	2	0	-2	0	-4	-2	-2	0	3	0	-5	6	5	7	6
18000	-1	0	-2	-2	-2	-7	1	0	2	2	1	-3	8	7	7	6
BANGKOK																
5000	2	7	12	0	4	-1	-1	-6	-12	0	-5	-11	7	7	9	7
10000	2	2	3	2	2	-3	-2	-2	-4	-2	-3	-8	8	7	9	7
18000	0	0	0	3	0	-6	-2	0	0	-3	-2	-8	11	10	9	9
BANGKOK																
5000	1	6	10	-4	3	-2	-1	-6	-10	4	-4	-9	6	6	8	7
10000	5	5	6	2	4	0	-5	-5	-6	-1	-5	-10	8	6	8	7
18000	8	5	-1	3	3	-3	-11	-6	1	-3	-5	-12	10	9	8	8
BANGKOK																
5000	2	6	7	-4	2	-2	-2	-5	-7	4	-3	-8	6	5	7	6
10000	10	9	6	3	7	2	-11	-9	-6	-3	-8	-12	7	5	7	6
18000	18	12	0	5	8	1	-23	-15	3	-5	-11	-20	8	8	7	7

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS														STANDARD DEVIATION
	DIRECT							RETURN							
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	
BANGKOK															
5000	-1	-5	-7	1	-3	-8	-9	2	5	7	0	3	0	-1	1999 N.M.I.
10000	-9	-7	-5	0	-6	-10	-11	9	7	5	1	5	1	0	5
18000	-22	-12	3	-3	-7	-17	-20	18	11	-3	3	6	-1	-2	9
BANGKOK															
5000	3	6	7	-2	3	-1	-2	-3	-6	-8	2	-4	-9	-10	1989 N.M.I.
10000	8	7	4	1	5	0	-1	-11	-9	-5	-2	-7	-12	-14	5
18000	15	10	4	7	8	2	1	-25	-16	-5	-9	-13	-21	-24	7
BANGKOK															
5000	-3	-4	-1	0	-2	-6	-7	3	4	0	0	1	-2	-3	1782 N.M.I.
10000	-11	-8	-3	-1	-6	-11	-12	10	7	3	1	5	0	0	5
18000	-24	-14	3	-4	-10	-20	-22	20	14	-3	4	8	0	-2	9
BANGKOK															
5000	1	0	1	3	1	-4	-5	-1	0	-3	-2	-2	-7	-8	546 N.M.I.
10000	-4	-4	-4	1	-3	-9	-10	4	4	4	-1	2	-3	-4	7
18000	-12	-8	2	2	-3	-12	-14	10	7	-2	-2	2	-5	-7	12
BANGKOK															
5000	1	-3	-8	-3	-4	-9	-10	-1	3	7	4	3	-1	-3	632 N.M.I.
10000	2	0	-2	-2	0	-5	-7	-1	0	1	3	0	-4	-5	7
18000	1	1	0	1	0	-4	-6	-1	-1	0	-1	-1	-7	-8	10
BANGKOK															
5000	-3	-4	-2	0	-3	-6	-7	3	4	1	0	1	-2	-3	1576 N.M.I.
10000	-10	-8	-3	-1	-6	-11	-12	10	8	3	1	5	0	0	5
18000	-23	-14	3	-3	-8	-19	-22	19	13	-3	3	6	-1	-3	10
BANGKOK															
5000	0	-2	-7	-3	-3	-8	-10	0	3	6	4	3	-1	-2	517 N.M.I.
10000	2	0	0	-3	0	-5	-7	-1	0	0	3	0	-5	-6	7
18000	0	1	0	0	0	-6	-7	0	-1	0	0	0	-6	-8	10
BANGKOK															
5000	2	4	8	-2	2	-2	-3	-2	-4	-8	2	-3	-8	-9	1751 N.M.I.
10000	1	3	2	-1	1	-3	-4	-4	-4	-2	0	-3	-7	-9	6
18000	4	4	3	4	3	-1	-3	-15	-9	-4	-6	-9	-15	-17	7
BANGKOK															
5000	3	6	7	-2	3	-1	-2	-3	-6	-8	2	-4	-9	-10	1998 N.M.I.
10000	10	9	5	3	5	1	0	-13	-10	-5	-3	-8	-13	-15	5
18000	19	12	3	8	9	3	2	-28	-18	-4	-10	-14	-24	-26	7

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS - GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADINGS												STANDARD DEVIATION					
	DIRECTION												DEVIATION					
	JAN	APR	JUL	OCT	*150	*175	*195	JAN	APR	JUL	OCT	*150	*175	*195	JAN	APR	JUL	OCT
BANGKOK																		
5000	0	-1	7	-9	0	-6	-7	1	1	-3	0	0	-6	-7	7	6	7	8
10000	3	3	6	1	3	-2	-3	-3	-2	-6	-1	-3	-9	-10	8	6	9	7
18000	-1	0	-4	-7	-3	-10	-11	1	0	4	7	2	-3	-5	10	9	9	8
400 N.M.I.																		
BANGKOK																		
5000	3	7	8	-3	3	-1	-3	-2	-6	-8	3	-4	-9	-10	6	6	7	6
10000	8	7	5	1	5	1	-1	-10	-8	-5	-1	-7	-12	-13	7	6	8	7
18000	15	10	2	6	7	1	0	-23	-14	-2	-7	-11	-19	-22	9	8	7	7
1549 N.M.I.																		
BANGKOK																		
5000	1	0	-3	-4	-2	-5	-7	-1	1	2	5	1	-2	-3	6	5	5	7
10000	3	2	0	-2	0	-4	-5	-2	-1	1	2	-1	-5	-7	7	6	8	7
18000	-1	0	-2	-2	-2	-7	-8	1	1	1	2	0	-4	-6	5	5	8	7
779 N.M.I.																		
BANGKOK																		
5000	7	6	8	-7	3	-2	-3	-1	-6	-3	7	-3	-8	-10	6	5	7	6
10000	8	3	6	2	6	1	0	-1	-5	-5	-2	-7	-12	-13	7	6	8	7
18000	14	9	0	4	6	0	-1	-13	-11	0	-4	-8	-16	-18	9	8	7	7
1355 N.M.I.																		
BANGKOK																		
5000	-1	-2	-3	-3	-3	-7	-8	1	2	3	3	2	-2	-3	8	7	5	7
10000	11	7	2	4	4	0	-2	-13	-7	-2	-7	-7	-14	-16	11	10	8	9
18000	21	14	6	14	12	2	0	-27	-19	-9	-17	-17	-30	-33	15	17	11	17
815 N.M.I.																		
BANGKOK																		
5000	0	0	-2	0	-1	-6	-7	0	0	2	0	0	-4	-5	8	8	6	7
10000	13	8	3	7	7	1	0	-15	-9	-3	-8	-9	-16	-18	10	9	8	9
18000	24	17	8	16	15	5	2	-30	-22	-10	-19	-19	-31	-35	18	16	10	15
1093 N.M.I.																		
BANGKOK																		
5000	9	7	5	6	6	1	0	-10	-4	-5	-6	-8	-13	-14	6	6	5	7
10000	21	13	9	11	13	6	5	-23	-15	-9	-12	-15	-22	-24	9	9	7	9
18000	33	23	17	22	22	14	12	-39	-27	-18	-26	-27	-38	-41	14	14	9	13
1882 N.M.I.																		
BANGKOK																		
5000	9	6	5	7	6	0	0	-9	-7	-5	-8	-8	-14	-15	9	9	7	9
10000	20	11	11	14	13	7	5	-21	-12	-11	-15	-15	-22	-24	10	10	8	10
18000	31	21	21	24	23	13	11	-35	-24	-22	-27	-27	-38	-40	17	16	11	15
1245 N.M.I.																		
BANGKOK																		
5000	6	2	2	5	3	-2	-4	-7	-2	-2	-6	-5	-11	-13	10	9	8	10
10000	4	3	5	5	4	-1	-3	-7	-4	-6	-7	-7	-13	-14	9	9	8	9
18000	4	6	10	6	6	-2	-4	-12	-10	-13	-13	-13	-22	-24	15	14	11	14
1224 N.M.I.																		

*HEADINGS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADINGS.

EQUIVALENT HEAD-LOADS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

[illegible]

◆ HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

CONDUCTED BY THE ARMY RESEARCH OFFICE, DURHAM, NORTH CAROLINA

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.														STANDARD DEVIATION						
	DIRECT							RETURN													
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85							
BOISE 5000 10000 18000	ENGLAND AFB														1339 N.M.I.						
	1	1	0	1	0	-4	-5	-2	-1	0	-1	-1	-6	-7	8	8	6	7			
	14	9	3	8	8	1	0	-16	-10	-3	-9	-10	-17	-18	10	9	7	9			
	25	18	8	17	15	6	4	-32	-23	-10	-20	-20	-32	-35	16	15	9	14			
BOISE 5000 10000 18000	FORT BENNING														1609 N.M.I.						
	5	4	2	4	3	-1	-2	-6	-5	-3	-4	-5	-10	-11	8	8	6	7			
	17	11	6	10	10	4	2	-19	-13	-6	-11	-12	-19	-21	10	9	7	9			
	29	21	13	20	19	10	8	-35	-26	-14	-23	-24	-35	-38	15	14	9	14			
BOISE 5000 10000 18000	FORT BLISS														845 N.M.I.						
	-4	-3	-3	-4	-4	-8	-9	4	3	4	5	4	0	0	7	7	4	6			
	9	4	0	3	3	-2	-4	-9	-5	0	-3	-4	-11	-13	11	9	8	9			
	14	9	0	8	6	-3	-6	-22	-15	-3	-12	-12	-25	-28	19	17	11	16			
BOISE 5000 10000 18000	FORT BRAGG/POPE														1786 N.M.I.						
	8	7	5	6	6	1	0	-10	-7	-4	-6	-7	-12	-14	8	8	6	7			
	21	13	9	12	13	7	5	-22	-14	-9	-12	-14	-21	-23	9	9	7	9			
	33	23	16	22	22	13	11	-39	-27	-17	-26	-26	-38	-41	15	14	9	14			
BOISE 5000 10000 18000	FORT CAMPBELL														1374 N.M.I.						
	6	5	3	5	4	0	-2	-7	-6	-3	-5	-6	-11	-13	9	9	7	8			
	19	11	8	12	12	5	4	-20	-12	-8	-13	-13	-21	-22	10	10	8	9			
	31	21	16	22	21	12	9	-36	-25	-17	-25	-25	-36	-39	16	15	10	15			
BOISE 5000 10000 18000	FORT CARSON														595 N.M.I.						
	-1	0	-1	-2	-2	-6	-8	1	0	2	2	1	-3	-4	8	8	6	7			
	14	8	5	9	8	1	0	-14	-8	-5	-9	-9	-17	-18	12	10	9	10			
	25	16	12	18	16	5	2	-30	-20	-14	-21	-21	-34	-37	21	19	12	18			
BOISE 5000 10000 18000	FORT EUSTIS														1810 N.M.I.						
	10	7	5	7	7	1	0	-11	-8	-5	-8	-8	-14	-15	9	8	6	8			
	22	14	11	13	14	8	7	-24	-15	-12	-14	-16	-23	-25	9	9	7	9			
	35	23	20	24	24	15	13	-40	-27	-21	-28	-28	-39	-42	15	14	9	14			
BOISE 5000 10000 18000	FORT MOOD														1157 N.M.I.						
	0	-1	-3	-1	-2	-7	-8	0	0	3	1	0	-4	-5	8	8	6	7			
	12	7	1	6	6	0	-1	-14	-8	-2	-7	-8	-15	-16	10	9	7	9			
	22	16	6	14	13	3	1	-29	-21	-8	-18	-18	-30	-33	17	15	10	15			
BOISE 5000 10000 18000	FORT HUACHUCA														771 N.M.I.						
	-4	-3	-2	-3	-3	-7	-9	4	4	3	3	3	0	-1	7	7	4	6			
	6	2	-1	1	1	-5	-7	-7	-3	1	-2	-3	-10	-12	12	10	8	10			
	8	5	-3	4	2	-8	-10	-17	-11	0	-9	-8	-21	-24	20	18	11	16			

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS														STANDARD DEVIATION			
	DIRECT							RETURN										
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85				
BOISE															1409 N.M.I.			
5000	8	6	4	6	5	0	-1	-9	-7	-4	-6	-7	-13	-14	9	9	7	8
10000	20	12	9	13	13	6	5	-21	-13	-9	-14	-14	-22	-23	10	10	8	9
18000	32	22	18	23	23	13	11	-37	-25	-19	-27	-27	-38	-41	16	15	10	15
BOISE															988 N.M.I.			
5000	5	4	3	5	4	-1	-2	-5	-5	-3	-5	-5	-11	-12	9	9	7	8
10000	18	10	8	12	11	4	3	-19	-11	-8	-13	-13	-20	-22	11	10	8	10
18000	30	20	17	22	21	11	8	-34	-23	-18	-25	-25	-36	-39	18	17	11	16
BOISE															341 N.M.I.			
5000	-2	-1	-2	0	-2	-8	-9	1	1	3	0	1	-4	-6	11	9	7	9
10000	-15	-8	-5	-5	-8	-17	-19	13	7	5	3	6	-1	-3	15	13	9	13
18000	-28	-17	-14	-21	-20	-34	-38	22	12	11	16	14	1	-1	23	21	15	21
BOISE															485 N.M.I.			
5000	-4	-4	1	-2	-2	-8	-10	4	4	0	3	2	-3	-4	10	8	6	8
10000	-6	-4	-6	-5	-6	-14	-15	3	3	6	4	4	-3	-5	14	13	8	12
18000	-14	-11	-13	-11	-13	-25	-28	4	5	11	6	7	-5	-9	23	20	13	19
BOISE															1631 N.M.I.			
5000	4	3	2	3	2	-1	-3	-5	-4	-2	-3	-4	-9	-10	8	8	6	7
10000	16	11	5	10	10	4	2	-18	-12	-5	-10	-11	-18	-20	9	9	7	9
18000	28	21	11	19	18	9	7	-34	-25	-12	-22	-22	-34	-37	15	14	8	13
BOISE															984 N.M.I.			
5000	0	0	-1	0	-1	-5	-7	-1	0	1	0	0	-5	-6	8	8	6	7
10000	14	9	4	8	8	1	0	-15	-9	-4	-9	-9	-16	-18	11	10	8	9
18000	25	18	10	17	16	6	4	-31	-22	-12	-20	-20	-32	-36	18	16	10	16
BOISE															1070 N.M.I.			
5000	0	0	-2	-1	-1	-6	-7	0	0	2	0	0	-4	-5	8	8	6	7
10000	13	8	3	7	7	0	0	-15	-9	-3	-8	-9	-16	-18	11	9	8	9
18000	23	17	8	16	14	5	2	-30	-21	-10	-19	-19	-31	-34	18	16	10	15
BOISE															1235 N.M.I.			
5000	9	6	5	7	6	0	0	-10	-6	-5	-8	-8	-14	-15	9	9	7	9
10000	20	11	11	14	13	7	5	-21	-12	-11	-15	-15	-22	-24	10	10	8	10
18000	31	21	22	24	24	14	11	-35	-24	-22	-27	-27	-38	-41	17	16	11	16
BOISE															240 N.M.I.			
5000	-2	0	0	-1	-1	-6	-8	2	0	0	1	0	-4	-5	9	9	6	8
10000	13	7	4	8	7	0	-1	-14	-8	-4	-8	-9	-17	-19	13	12	9	11
18000	23	14	10	16	15	2	-1	-28	-18	-13	-20	-19	-33	-37	23	21	14	20

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.														STANDARD DEVIATION	
	DIRECT				RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85		
BOISE																
500	6	5	3	4	HUNTER AAF	4	0	-1	-7	-6	-3	-5	-6	-11	-12	1786 N.M.I.
1000	18	12	7	10	11	5	3	3	-20	-13	-7	-11	-13	-20	-22	8 8 6 7
18000	30	22	13	20	20	11	9	9	-36	-26	-14	-23	-24	-35	-38	9 9 7 9
BOISE																
500	6	5	3	4	HUNTSVILLE	4	0	-2	-7	-5	-3	-4	-5	-10	-12	1462 N.M.I.
1000	18	11	7	11	11	5	3	3	-20	-13	-7	-12	-13	-20	-22	9 9 6 7
18000	30	21	14	21	20	11	9	9	-36	-25	-15	-24	-24	-36	-39	10 9 7 9
BOISE																
500	6	4	2	3	JACKSONVILLE	3	-1	-2	-6	-5	-2	-4	-5	-10	-11	1818 N.M.I.
1000	17	11	5	9	10	4	2	2	-19	-13	-6	-10	-12	-19	-21	8 8 6 7
18000	29	21	11	19	18	10	8	8	-35	-26	-13	-22	-23	-34	-37	9 9 7 8
BOISE																
500	0	2	0	0	JUNEAU	0	-5	-6	-1	-2	1	-1	-1	-7	-8	1122 N.M.I.
1000	-9	-4	-4	-1	-5	-12	-14	-14	6	3	3	0	2	-4	-5	10 8 6 9
18000	-20	-10	-9	-14	-13	-24	-27	-27	14	4	6	8	7	-2	-5	12 10 8 10
BOISE																
500	-3	0	-2	-1	KODIAK	-2	-7	-9	2	0	2	0	1	-4	-5	1593 N.M.I.
1000	-12	-5	-5	-5	-7	-14	-16	-16	9	3	5	2	4	-2	-3	10 8 6 8
18000	-24	-13	-13	-18	-17	-28	-30	-30	18	8	10	12	11	1	0	12 10 8 10
BOISE																
500	0	0	-2	0	LARSON AFB	-1	-7	-8	-1	0	3	0	0	-6	-8	254 N.M.I.
1000	-11	-5	-3	-1	-5	-14	-16	-16	9	4	2	0	3	-5	-7	11 10 7 10
18000	-23	-13	-8	-16	-15	-29	-33	-33	15	7	4	9	8	-5	-8	14 13 9 13
BOISE																
500	3	3	1	3	LITTLE ROCK	2	-2	-4	-4	-4	-2	-3	-3	-9	-10	1228 N.M.I.
1000	17	10	6	10	10	3	2	2	-18	-11	-6	-11	-12	-19	-21	9 9 6 8
18000	29	20	13	20	19	9	7	7	-34	-24	-14	-23	-23	-35	-38	10 10 8 9
BOISE																
500	9	7	5	7	LOCKPOURNE	5	1	0	-10	-7	-5	-8	-8	-14	-15	1502 N.M.I.
1000	21	12	11	14	14	7	6	6	-22	-14	-11	-14	-15	-22	-24	9 9 7 8
18000	33	22	20	24	24	14	12	12	-38	-26	-21	-28	-28	-39	-42	10 10 8 9
BOISE																
500	-4	-3	-2	-1	LUKE AFB	-3	-8	-9	4	3	2	3	2	-1	-2	630 N.M.I.
1000	5	2	-1	1	1	-5	-7	-7	-7	-3	1	-2	-3	-10	-12	8 7 5 6
18000	6	3	-3	3	1	-10	-12	-12	-16	-10	0	-8	-8	-21	-24	13 11 8 10

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN LBS	EQUIVALENT HEADWIND										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00ASO	A75	A85	RETURN			JAN	APR	JUL	OCT
NOISE	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-3	-2	0	-1	-2	-7	-8				3	2	0	1
10000	-1	-1	-4	-2	-3	-10	-12				-1	0	4	1
18000	-6	-6	-9	-5	-7	-19	-22				-3	0	7	0
NOISE	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	4	3	1	3	2	-2	-3				-5	-4	-1	-3
10000	16	11	4	8	9	3	2				-17	-12	-5	-9
18000	27	21	10	17	17	9	7				-34	-25	-11	-20
NOISE	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	7	5	3	7	1	0				-11	-7	-5	-8
10000	21	13	12	14	14	8	6				-23	-14	-12	-15
18000	33	22	21	24	24	15	13				-38	-26	-22	-28
NOISE	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	2	1	1	3	0	-4	-5				-3	-2	-1	0
10000	-7	-1	-2	0	-3	-4	-10				5	1	2	-1
18000	-15	-5	-5	-9	-9	-17	-19				10	1	3	4
NOISE	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	9	3	2	5	4	-2	-3				-10	-4	-2	-5
10000	9	5	7	9	7	0	-1				-12	-6	-8	-10
18000	11	10	15	11	12	0	-2				-19	-14	-18	-18
NOISE	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	6	4	4	6	5	0	-1				-7	-6	-4	-6
10000	19	11	9	13	12	5	4				-20	-12	-9	-13
18000	31	21	18	23	22	12	10				-36	-24	-19	-26
NOISE	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	6	5	8	7	1	0				-11	-7	-5	-8
10000	20	11	12	14	14	7	6				-22	-13	-12	-15
18000	32	21	22	25	24	15	12				-36	-25	-23	-28
NOISE	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	7	4	4	5	5	0	0				-9	-7	-4	-5
10000	20	11	12	14	12	6	4				-21	-14	-8	-12
18000	31	22	15	21	21	12	10				-38	-27	-16	-25
NOISE	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	11	6	6	8	7	2	0				-12	-7	-6	-9
10000	21	12	13	15	15	8	7				-23	-14	-14	-16
18000	33	22	23	25	25	16	14				-38	-26	-24	-29

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00ASO--DEFINES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
PLUS SIGN--NOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION				
	RETURN												JAN APR JUL OCT				
	JAN	APR	JUL	OCT	00ASO	A75	AB5	JAN	APR	JUL	OCT						
BOISE																	
5000	10	5	5	8	14	1	0	-11	-6	-5	-8	-8	-14	-15	9	9	1410 N.M.I.
10000	20	11	13	15	14	7	6	-21	-12	-13	-15	-16	-22	-24	10	10	8 10
15000	30	20	23	24	24	14	12	-35	-23	-24	-26	-28	-38	-40	16	15	10 15
BOSTON																	
5000	0	0	-2	0	-1	-7	-9	0	0	3	0	1	-5	-7	11	10	256 N.M.I.
10000	-14	-7	-4	-4	-7	-16	-18	12	6	4	2	5	-2	-4	15	13	9 13
15000	-24	-16	-12	-19	-18	-32	-36	20	11	9	14	13	0	-3	23	22	15 21
BUFFALO																	
5000	1	2	0	1	1	-4	-5	-4	-2	0	-2	-2	-8	-10	9	9	1136 N.M.I.
10000	-4	-1	-1	0	-2	-8	-10	2	0	3	-1	0	-6	-7	10	9	7 9
15000	-15	-2	-1	-5	-5	-14	-17	2	-1	-1	0	0	-10	-12	15	14	11 15
CHICAGO																	
5000	3	6	10	0	4	0	-1	-2	-5	-13	0	-4	-9	-11	6	6	899 N.M.I.
10000	11	11	5	2	7	1	0	-11	-10	-4	-1	-7	-13	-14	7	7	7 6
15000	22	12	-3	4	7	-1	-3	-24	-13	3	-4	-8	-19	-22	12	11	8 8
COLUMBUS																	
5000	2	4	10	3	6	0	-1	-2	-3	-12	-3	-5	-10	-12	5	6	837 N.M.I.
10000	-2	-4	6	1	0	-5	-7	3	4	-7	0	0	-5	-7	6	7	7 7
15000	5	-1	-2	2	3	-5	-6	-6	1	2	-2	-1	-7	-9	10	9	7 7
DALLAS																	
5000	-4	-7	-12	0	-6	-11	-13	5	7	12	0	5	0	0	6	6	1326 N.M.I.
10000	-11	-9	-3	-1	-6	-12	-13	11	8	3	1	5	0	0	7	7	6 6
15000	-31	-21	0	-6	-13	-26	-29	29	20	0	6	11	1	0	11	10	6 8
DENVER																	
5000	5	2	1	2	2	3	-1	-4	-2	-3	-2	-3	-6	-7	4	4	1506 N.M.I.
10000	3	0	-2	0	-1	-5	-5	0	-1	1	0	0	-4	-4	5	6	5 5
15000	2	-1	0	3	3	-3	-4	-3	1	0	-2	-1	-6	-7	6	6	5 5
DURHAM																	
5000	3	6	6	0	4	0	0	-3	-6	-8	0	-4	-9	-10	5	5	1859 N.M.I.
10000	11	11	5	2	7	2	1	-11	-10	-6	-2	-8	-13	-14	6	5	7 5
15000	21	12	-3	4	7	0	-2	-23	-13	3	-5	-9	-18	-21	9	8	6 6
HONOLULU																	
5000	-1	-6	-7	1	-3	-9	-10	2	6	7	0	3	-1	-3	7	7	472 N.M.I.
10000	-6	-3	-2	0	-3	-9	-10	5	2	2	0	2	-3	-4	8	9	8 8
15000	-25	-13	1	-6	-9	-21	-24	21	10	-1	6	7	-1	-3	14	13	0 10

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00ASO--NOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN NOTES HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT M F A D M I N D S O												STANDARD DEVIATION		
	DIRECTION						SEASON								
	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL
NEWARK															
5000	0	-1	4	0	0	-6	0	1	-4	1	0	-5	-6	7	747 N.M.I.
10000	2	4	1	-1	1	-5	-3	-5	3	1	-2	-7	-9	6	7 7
15000	-3	0	-1	-2	-2	-11	-6	-4	1	1	-1	-9	-11	13	12 8 9
NEWARK															
5000	4	6	9	0	4	-1	-3	-6	-9	0	-5	-9	-11	5	1315 N.M.I.
10000	12	11	5	2	7	0	-11	-11	-5	-2	-8	-13	-15	7	6 7 6
15000	22	12	-3	5	7	0	-24	-13	3	-5	-9	-19	-22	10	9 7 7
NEWARK															
5000	0	1	13	-1	1	-2	1	-1	-14	1	-2	-8	-11	4	1776 N.M.I.
10000	-1	-1	8	1	0	-3	1	1	-6	-1	-1	-6	-7	5	5 5 5
15000	0	0	-3	-1	-1	-7	-2	3	4	1	0	-4	-5	8	7 6 5
NEWARK															
5000	0	0	6	-1	0	-3	0	0	-9	1	-1	-7	-8	7	615 N.M.I.
10000	2	6	2	-1	2	-4	-6	-7	-1	1	-3	-9	-11	8	7 8 7
15000	4	4	-1	3	1	-8	-14	-6	1	0	-4	-13	-16	13	13 9 9
NEWARK															
5000	-1	1	13	-2	0	-4	1	0	-14	2	-1	-8	-11	4	1803 N.M.I.
10000	0	0	8	3	1	-3	0	0	-8	0	-2	-4	-7	5	5 5 5
15000	1	1	-4	-2	-1	-7	-2	-1	4	1	0	-4	-5	8	7 6 5
NEWARK															
5000	-3	-6	-7	0	-4	-9	3	6	7	0	3	0	-1	6	1495 N.M.I.
10000	-4	-6	-3	-3	-5	-10	7	5	3	3	4	0	-1	7	6 6 5
15000	-29	-21	-5	-10	-15	-24	24	17	4	9	12	4	3	11	10 7 8
NEWARK															
5000	-2	-6	-8	1	-4	-9	3	7	8	-1	3	-1	-2	7	902 N.M.I.
10000	-7	-9	-2	-1	-4	-10	6	4	3	1	3	-1	-2	7	7 7 6
15000	-26	-14	0	-9	-12	-24	23	14	0	7	9	1	0	13	12 7 9
NEWARK															
5000	0	4	3	1	2	-3	0	-9	-3	-1	-3	-8	-9	8	840 N.M.I.
10000	0	-1	-3	-1	-2	-6	0	0	1	0	0	-5	-7	9	8 8 8
15000	-1	-5	-12	-9	-8	-17	1	3	10	5	4	-3	-5	10	11 13 12
NEWARK															
5000	1	7	4	3	3	-1	-3	-6	-4	0	-4	-8	-10	7	1524 N.M.I.
10000	7	3	-5	-1	0	-5	-7	-4	3	0	-2	-8	-9	7	6 7 7
15000	-4	-7	-22	-14	-11	-23	3	5	19	10	8	1	0	6	9 10 10

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 WINDS--DAILY ANNUAL EQUIVALENT HEADWINDS ARE INDICATED PER CENT RELIABILITIES.
 PLUS SIGN INDICATES HEADWINDS.

EQUIVALENT ANNUAL DEVIATION IN KNOTS AND GREAT CIRCLE AIR ROUTES

STATION IN CITY	EQUIVALENT ANNUAL DEVIATION IN KNOTS AND GREAT CIRCLE AIR ROUTES												STANDARD DEVIATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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AF ISHANE 5000 10000 18000	TN -3 -4 -15	-5 -8 -15	-7 -12 -20	-5 -11 -23	-5 -10 -18	-12 -18 -29	-14 -20 -32	WELLSBORO	JAN	3 5 13	3 7 11	6 11 12	4 6 14	-2 0 2	-3 -2 0	733 M.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
CALCUTTA																		
5000	2	4	3	-1	1	-2	-3	-2	-4	-4	2	-2	-7	-8	6	6	7	6
10000	9	9	6	2	6	1	0	-9	-8	-6	-2	-7	-12	-13	7	6	8	6
18000	18	11	-3	2	6	-2	-3	-19	-12	3	-2	-7	-16	-19	10	9	8	8
CALCUTTA																		
5000	4	7	3	0	3	-1	-2	-4	-6	-4	0	-4	-9	-10	6	6	8	6
10000	13	12	6	3	8	2	1	-13	-12	-6	-3	-9	-15	-17	8	7	9	7
18000	26	14	-3	6	10	0	-2	-27	-17	3	-6	-11	-23	-26	11	10	8	9
CALCUTTA																		
5000	3	7	3	-2	2	-2	-3	-3	-4	-3	2	-3	-8	-9	6	6	7	6
10000	14	13	6	3	9	3	1	-14	-12	-6	-3	-9	-15	-16	7	6	8	6
18000	29	19	-3	7	12	0	-1	-30	-19	3	-7	-13	-25	-28	10	9	7	8
CALCUTTA																		
5000	-3	-7	-4	0	-4	-8	-10	4	7	4	0	3	-1	-2	6	6	7	6
10000	-15	-10	-3	-1	-7	-14	-15	15	11	3	2	7	1	0	7	7	7	6
18000	-34	-21	3	-7	-13	-28	-31	33	20	-3	7	12	0	-1	11	11	8	8
CALCUTTA																		
5000	-5	-6	1	0	-3	-8	-9	5	6	-1	0	2	-2	-3	6	6	7	6
10000	-13	-8	-1	-2	-7	-13	-14	13	8	1	3	6	0	-1	7	7	8	7
18000	-30	-20	3	-8	-13	-26	-29	26	19	-3	8	11	1	-1	12	11	9	9
CALCUTTA																		
5000	7	7	3	1	4	0	-2	-7	-6	-4	-1	-5	-10	-12	7	7	9	7
10000	14	13	5	4	9	2	0	-14	-13	-5	-3	-9	-16	-18	9	8	10	8
18000	28	16	-3	6	10	0	-2	-29	-17	3	-7	-12	-24	-27	13	12	10	10
CALCUTTA																		
5000	1	-1	0	-3	-1	-5	-6	-1	2	-2	4	0	-3	-5	5	5	6	6
10000	3	2	2	-1	1	-2	-4	-3	-2	-2	1	-2	-6	-7	6	5	7	6
18000	4	3	-2	-2	0	-5	-6	-6	-4	2	2	-1	-7	-9	9	8	7	7
CALCUTTA																		
5000	-5	-6	0	0	-3	-8	-9	6	7	0	0	3	-2	-3	7	7	8	6
10000	-15	-10	-1	-3	-8	-14	-16	15	10	1	3	7	0	-1	8	8	9	7
18000	-32	-20	3	-7	-13	-27	-30	28	19	-3	7	11	0	-2	13	12	9	10
CALCUTTA																		
5000	0	0	1	-3	0	-4	-5	0	1	-2	3	0	-4	-4	5	5	6	6
10000	3	3	3	-1	1	-2	-3	-3	-3	-3	2	-2	-6	-8	6	5	7	6
18000	4	4	-2	-2	0	-5	-6	-7	-4	2	2	-1	-8	-9	9	8	7	7

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

AIRPORT IN FEET	EQUIVALENT HEADWINDS IN KNOTS										STANDARD DEVIATION				
	RETURN										JAN APP JUL OCT				
	JAN	APR	JUL	OCT	HEADWIND	475	495	JAN	APR	JUL	OCT	475	495	475	495
CALCUTTA															
TO PEIPING	6	4	5	-1	3	-1	-2	-6	-4	-5	1	-4	-8	-9	1747 N.M.I.
5000	10	10	2	2	6	0	0	-13	-11	-4	-3	-8	-14	-15	5 6 6 5
10000	25	16	5	10	13	5	4	-32	-20	-6	-12	-17	-27	-29	7 7 7 6
18000															10 9 8 8
CALCUTTA															
TO SAIGON	1	1	3	-2	0	-3	-4	-1	-1	-4	2	-1	-5	-6	1263 N.M.I.
5000	6	6	5	0	4	0	-1	-6	-6	-5	0	-5	-10	-11	5 5 7 6
10000	9	6	-3	-1	1	-4	-5	-11	-7	3	1	-3	-10	-12	7 6 8 6
18000															9 8 7 7
CALCUTTA															
TO SHANGHAI	7	7	4	-1	4	0	-2	-6	-6	-4	1	-4	-9	-10	1833 N.M.I.
5000	17	14	5	4	9	3	2	-18	-14	-5	-4	-11	-17	-19	5 6 7 5
10000	35	23	1	12	16	5	3	-39	-26	-2	-12	-19	-33	-36	7 6 7 6
18000															10 9 7 8
CALCUTTA															
TO SINGAPORE	1	0	1	-3	0	-4	-5	-1	0	-2	3	0	-4	-5	1563 N.M.I.
5000	3	3	3	-1	1	-2	-3	-3	-3	-3	1	-2	-6	-7	5 5 5 6
10000	2	2	-2	-2	0	-5	-6	-5	-3	2	2	-1	-6	-8	6 5 7 5
18000															8 7 7 6
CALCUTTA															
TO TAIPEI	3	7	2	-2	2	-2	-3	-3	-7	-3	2	-3	-8	-9	1816 N.M.I.
5000	17	14	5	3	9	3	1	-17	-14	-5	-3	-10	-17	-18	5 6 7 5
10000	35	23	-2	9	15	2	0	-36	-24	1	-9	-16	-30	-33	7 6 7 6
18000															9 8 7 7
CALCUTTA															
TO ZAMEDAN	-3	-7	-2	0	-3	-7	-8	4	7	3	0	3	0	-1	1536 N.M.I.
5000	-14	-10	-2	-2	-7	-13	-15	14	10	2	3	7	1	0	5 5 6 5
10000	-35	-24	1	-9	-16	-30	-33	33	23	-1	9	14	2	0	6 6 6 6
18000															11 10 7 8
CANNON AFB															
TO CARSWELL AFB	5	3	1	4	3	-4	-6	-6	-4	-1	-4	-4	-12	-14	309 N.M.I.
5000	18	13	1	7	9	0	-1	-19	-14	-1	-8	-11	-20	-23	13 13 9 11
10000	32	26	4	16	17	4	1	-36	-29	-5	-18	-21	-37	-41	13 12 10 12
18000															21 18 11 18
CANNON AFB															
TO CHEROKEE PT MCAS	11	9	6	5	7	1	0	-12	-10	-6	-6	-	-15	-17	1301 N.M.I.
5000	24	18	6	9	13	5	3	-26	-19	-6	-10	-15	-24	-27	10 10 7 9
10000	40	30	9	20	23	11	8	-44	-33	-9	-23	-27	-41	-45	11 11 8 10
18000															16 15 9 15
CANNON AFB															
TO CHICAGO	8	7	8	6	7	0	-1	-9	-8	-8	-7	-9	-15	-17	856 N.M.I.
5000	17	13	8	10	11	3	1	-20	-14	-8	-11	-14	-22	-24	12 12 8 10
10000	28	21	12	15	17	7	4	-36	-26	-13	-21	-23	-37	-40	12 12 10 12
18000															19 18 11 17

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DEFINIES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN INDICATES TAILWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION			
	DIRECT								RETURN							
	JAN	APR	JUL	OCT	**450	A75	A85		JAN	APR	JUL	OCT		**450	A75	A85
CANNON AFB	CHURCHILL															
5000	0	0	3	0	0	-5	-7	0	-1	-3	-1	-2	-6	-9	1508 N.MI.	
10000	-3	-1	0	-2	-2	-8	-9	0	0	-2	0	-1	-7	-8	9	
18000	-5	-1	1	-3	-2	-11	-13	-5	-4	-5	-3	-5	-13	-15	9	
CANNON AFB	CORPUS CHRISTI															
5000	0	-2	-7	0	-3	-10	-12	0	1	7	0	2	-5	-7	507 N.MI.	
10000	6	4	-3	2	1	-5	-7	-9	-6	3	-2	-3	-12	-14	12	
18000	12	11	-2	8	5	-4	-7	-22	-18	1	-11	-11	-25	-28	12	
CANNON AFB	DOVER AFB															
5000	12	9	7	7	8	2	1	-13	-10	-7	-7	-10	-16	-18	1363 N.MI.	
10000	25	13	9	11	15	7	5	-27	-19	-9	-12	-16	-25	-28	10	
18000	41	24	13	22	24	13	10	-45	-32	-14	-26	-28	-42	-46	11	
CANNON AFB	EDMONTON															
5000	0	0	2	0	0	-5	-6	0	0	-2	0	-1	-6	-8	1229 N.MI.	
10000	-12	-6	-2	-7	-7	-14	-15	9	4	2	6	5	-1	-2	9	
18000	-21	-11	-5	-15	-13	-24	-26	12	6	2	9	6	-2	-4	10	
CANNON AFB	EGLIN AFB															
5000	7	5	2	4	4	-2	-3	-8	-6	-3	-4	-5	-12	-14	11	
10000	19	14	1	7	9	1	0	-20	-15	-2	-8	-11	-20	-23	11	
18000	33	27	3	17	18	5	3	-37	-30	-3	-19	-22	-37	-40	17	
CANNON AFB	ELLINGTON AFB															
5000	3	0	-2	2	0	-6	-8	-4	-1	2	-2	-1	-9	-11	504 N.MI.	
10000	13	9	-1	5	5	-2	-4	-15	-10	1	-6	-7	-16	-18	12	
18000	23	20	0	13	12	0	-2	-31	-25	0	-15	-17	-32	-36	12	
CANNON AFB	ELLSWORTH AFB															
5000	0	3	6	2	2	-4	-6	0	-3	-6	-3	-3	-10	-12	626 N.MI.	
10000	-4	-1	1	-2	-2	-9	-11	1	0	-2	0	0	-8	-10	10	
18000	-10	-4	0	-6	-4	-16	-20	-2	-3	-3	0	-3	-14	-16	12	
CANNON AFB	FLYING MCAS															
5000	-2	-2	0	3	-1	-5	-6	2	2	1	-2	0	-4	-5	8	
10000	-13	-11	-4	-4	-9	-16	-18	12	11	4	6	7	1	0	12	
18000	-32	-26	-10	-15	-20	-33	-36	28	24	9	13	16	6	3	19	
CANNON AFB	ENGLAND AFB															
5000	0	4	1	4	3	-3	-5	-7	-5	-2	-4	-5	-12	-14	12	
10000	18	13	1	7	9	0	-1	-19	-14	-1	-8	-11	-20	-22	12	
18000	31	26	2	16	17	4	1	-16	-29	-2	-18	-20	-36	-40	19	

*HEADWINDS--COMPUTED FOR A 120-KT AIR-SPEED.

**--OPOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

WINDS SIGN. NEGATES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

OFFICE IN FEET	EQUIVALENT HEADWIND IN KNOTS										STANDARD DEVIATION			
	DIRECT					RETURN					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	***A50	A75	A85	JAN	APR	JUL	OCT	***A50	A75	A85
CANNON AFB														
5000	8	7	4	5	5	0	-2	-9	-8	-4	-5	-7	-13	-15
10000	21	16	4	9	11	3	1	-22	-17	-4	-9	-13	-22	-24
18000	36	29	6	18	20	8	5	-40	-32	-6	-21	-24	-39	-43
CANNON AFB														
5000	-6	-6	-5	-4	-6	-12	-14	6	6	6	4	5	0	-2
10000	-13	-12	-4	-6	-9	-17	-19	11	11	4	6	7	0	-1
18000	-28	-23	-8	-12	-17	-31	-34	20	18	8	9	12	1	-1
CANNON AFB														
5000	11	9	6	6	7	1	0	-12	-9	-6	-6	-8	-15	-17
10000	24	16	6	9	13	5	3	-25	-19	-6	-10	-15	-24	-27
18000	40	30	9	20	22	10	8	-44	-33	-4	-23	-26	-41	-45
CANNON AFB														
5000	9	8	7	6	7	0	-1	-10	-9	-7	-6	-8	-15	-17
10000	23	17	6	10	13	4	2	-24	-18	-6	-11	-15	-24	-27
18000	38	29	9	19	21	9	6	-42	-32	-10	-22	-25	-41	-45
CANNON AFB														
5000	1	4	7	4	4	-2	-4	-1	-4	-6	-4	-4	-11	-13
10000	-7	-3	0	-2	-3	-11	-14	4	1	-1	1	0	-7	-9
18000	-16	-11	-1	-9	-9	-22	-26	4	2	0	4	1	-9	-12
CANNON AFB														
5000	11	9	7	7	8	2	0	-12	-10	-7	-7	-9	-16	-17
10000	25	18	8	11	14	7	5	-26	-19	-9	-11	-16	-25	-27
18000	41	29	12	21	23	12	10	-45	-32	-13	-25	-27	-42	-46
CANNON AFB														
5000	3	0	-2	2	0	-7	-8	-4	-1	2	-2	-1	-9	-11
10000	14	9	-1	5	5	-2	-4	-16	-11	1	-6	-8	-17	-20
18000	24	20	1	13	13	0	-1	-32	-25	-1	-16	-17	-33	-37
CANNON AFB														
5000	-3	-4	-2	0	-3	-8	-10	3	4	2	0	2	-3	-4
10000	-14	-12	-4	-6	-9	-17	-19	13	12	4	6	8	0	-1
18000	-32	-27	-8	-14	-19	-33	-37	27	24	8	12	16	4	2
CANNON AFB														
5000	10	8	7	6	7	0	-1	-11	-9	-7	-7	-9	-16	-18
10000	23	17	7	11	13	5	3	-24	-18	-7	-11	-15	-24	-27
18000	38	27	11	19	21	10	7	-42	-31	-11	-23	-25	-41	-44

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--FLEET'S ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.*												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
CANNON AFB																		
5000																		
10000																		
18000																		
CANNON AFB																		
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18000																		
CANNON AFB																		
5000																		
10000																		
18000																		
CANNON AFB																		
5000																		
10000																		
18000																		

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION									
	DIRECT					RETURN					JAN APR JUL OCT					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85		JAN	APR	JUL	OCT	
CANYON AFB	TO					HUNTER AAF										1120 N.MI.				
5000	9	7	4	5	5	0	-1	-10	-8	-4	-5	-7	-13	-15		11	10	7	9	
10000	21	16	4	8	11	3	1	-22	-17	-4	-9	-13	-22	-24		11	11	8	10	
18000	36	29	6	18	21	8	5	-40	-32	-6	-21	-24	-39	-42		16	15	9	15	
CANYON AFB	TO					HUNTSVILLE										817 N.MI.				
5000	9	8	6	6	7	0	-1	-10	-9	-6	-6	-8	-15	-17		12	12	8	10	
10000	23	17	5	10	13	4	2	-24	-18	-5	-10	-14	-24	-26		12	12	9	12	
18000	38	30	8	19	21	9	6	-42	-33	-8	-22	-25	-41	-45		19	17	10	16	
CANYON AFB	TO					JACKSONVILLE										1121 N.MI.				
5000	7	6	3	4	4	-1	-2	-8	-7	-3	-5	-6	-12	-14		10	10	7	9	
10000	19	15	3	7	10	2	0	-21	-16	-3	-9	-12	-21	-23		11	10	8	10	
18000	34	28	5	17	19	7	5	-38	-31	-5	-19	-23	-37	-40		16	15	8	14	
CANYON AFB	TO					JUNEAU										1905 N.MI.				
5000	0	1	1	0	0	-4	-5	0	-1	0	-1	-1	-5	-6		7	7	5	7	
10000	-12	-4	-3	-5	-7	-13	-14	10	5	3	4	5	0	-1		9	8	7	8	
18000	-23	-13	-8	-17	-15	-25	-27	17	8	6	12	10	1	0		14	13	10	13	
CANYON AFB	TO					KEY WEST										1266 N.MI.				
5000	1	1	-1	1	0	-5	-6	-2	-2	1	-1	-1	-7	-8		9	9	6	8	
10000	12	9	-1	4	5	-1	-3	-13	-10	1	-5	-7	-14	-16		9	9	7	9	
18000	24	22	0	11	13	1	0	-29	-25	0	-13	-16	-29	-32		14	13	7	12	
CANYON AFB	TO					LAPSON AFB										1054 N.MI.				
5000	0	1	2	2	1	-3	-4	-1	-1	-1	-2	-2	-6	-7		8	7	5	7	
10000	-13	-7	-3	-6	-7	-14	-16	11	6	2	5	5	0	-2		11	9	8	9	
18000	-27	-17	-9	-13	-17	-29	-32	20	12	6	14	12	1	0		18	16	11	16	
CANYON AFB	TO					LITTLE ROCK										552 N.MI.				
5000	3	7	6	6	6	-1	-2	-9	-8	-6	-6	-8	-15	-17		13	13	9	11	
10000	22	17	4	9	12	3	1	-23	-18	-5	-10	-14	-24	-26		13	12	10	12	
18000	37	29	8	18	20	3	5	-41	-32	-8	-21	-24	-40	-44		20	18	10	17	
CANYON AFB	TO					LOCKPORT										1024 N.MI.				
5000	10	9	7	7	7	1	0	-11	-9	-7	-7	-9	-16	-17		11	11	8	9	
10000	23	15	8	11	13	5	3	-24	-18	-8	-12	-15	-24	-27		12	12	9	11	
18000	37	26	12	20	22	10	8	-43	-30	-13	-24	-26	-41	-44		18	17	10	16	
CANYON AFB	TO					LONG AFB										1761 N.MI.				
5000	10	7	9	8	8	2	1	-12	-8	-8	-9	-10	-15	-17		10	9	7	8	
10000	20	14	11	13	14	7	5	-23	-15	-12	-15	-16	-24	-25		10	10	8	10	
18000	33	21	17	21	22	13	10	-40	-26	-19	-26	-27	-38	-41		15	15	9	14	

HEADWINDS COMPUTED FOR A 120-KT AIRSPEED.

STANDARD DEVIATIONS ARE SHOWN IN KNOTS. EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

* THIS TABLE GIVES HEADWINDS.

DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

STANDARD DEVIATION	RETURN											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
453 N.M.I.	9	8	5	8	13	10	9	11	21	18	11	17
1407 N.M.I.	10	10	7	9	11	11	8	10	16	16	9	15
658 N.M.I.	13	12	8	10	13	12	9	12	20	18	10	17
924 N.M.I.	9	9	6	8	9	8	7	8	15	12	7	12
783 N.M.I.	11	12	9	11	12	12	10	12	20	18	11	17
838 N.M.I.	10	11	8	10	12	11	9	11	19	17	11	17
584 N.M.I.	8	8	5	7	12	10	9	10	20	18	11	17
1305 N.M.I.	11	10	7	9	11	11	8	10	17	16	9	16
721 N.M.I.	12	11	8	10	12	11	8	11	18	16	9	16

HEADINGS--COMPUTED FOR A 120-KT AIRSPEED.
 001--DEOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUVALENT HEADWINDS										STANDARD DEVIATION				
	DIRECT					RETURN					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	
CANNON AFB	TO	8	8	7	8	1	0	-11	-8	-8	-8	-9	-16	-17	1249 N.M.I.
5000	10	8	8	7	8	1	0	-23	-16	-10	-13	-16	-24	-26	11 10 8 9
10000	21	15	9	12	13	6	4	-41	-24	-16	-25	-27	-39	-43	11 11 9 11
18000	34	23	14	20	21	11	8								17 16 10 16
CANNON AFB	TO	-2	0	3	-1	-5	-4	2	2	1	-2	0	-4	-5	781 N.M.I.
5000	-2	0	3	-1	-5	-4	-4	12	11	4	6	7	1	0	8 7 5 7
10000	-13	-11	-4	-6	-9	-16	-18	28	23	10	13	16	6	4	12 10 8 10
18000	-31	-26	-11	-15	-20	-32	-36								19 17 10 15
CANNON AFB	TO	5	2	4	3	-1	-3	-6	-5	-2	-4	-5	-10	-12	1218 N.M.I.
5000	5	2	4	3	-1	-3	-3	-18	-14	-1	-7	-10	-18	-20	10 9 6 8
10000	17	13	1	6	8	1	0	-36	-24	-3	-17	-21	-35	-38	10 10 7 9
18000	31	26	2	15	17	1	2								15 14 8 13
CANNON AFB	TO	11	8	7	7	8	1	-12	-9	-7	-8	-9	-16	-18	1156 N.M.I.
5000	11	8	7	7	8	1	0	-25	-18	-3	-12	-16	-25	-27	11 11 8 9
10000	23	17	9	11	14	6	4	-44	-30	-14	-25	-27	-41	-45	12 12 9 11
18000	38	26	13	21	22	11	9								18 17 10 16
CANNON AFB	TO	-1	3	0	0	-5	-7	0	-1	-3	-1	-2	-8	-9	965 N.M.I.
5000	-1	3	0	0	-5	-7	-7	4	2	0	2	1	-5	-6	10 10 8 9
10000	-7	-3	0	-4	-4	-11	-13	2	0	-2	2	0	-10	-12	11 10 9 10
18000	-14	-7	-1	-9	-7	-19	-22								18 16 11 16
CANNON AFB	TO	9	8	5	7	0	-1	-10	-9	-8	-7	-9	-16	-18	689 N.M.I.
5000	9	8	5	7	0	-1	-1	-22	-16	-7	-11	-14	-23	-25	12 12 9 10
10000	20	15	7	10	12	4	2	-39	-29	-11	-21	-24	-39	-43	13 12 10 12
18000	34	25	10	17	19	7	5								20 18 11 18
CANNON AFB	TO	9	7	8	7	7	1	-11	-8	-3	-8	-9	-16	-17	1077 N.M.I.
5000	9	7	8	7	7	1	0	-22	-15	-9	-12	-15	-23	-25	11 11 8 9
10000	20	14	9	11	13	5	3	-39	-27	-15	-23	-25	-38	-41	12 12 9 11
18000	32	22	14	18	20	9	7								18 17 10 16
CANNON AFB	TO	10	8	5	9	13	5	-11	-9	-6	-6	-8	-15	-16	1131 N.M.I.
5000	10	8	5	9	13	5	3	-24	-19	-5	-10	-14	-24	-26	11 10 7 9
10000	23	18	5	9	13	4	2	-43	-33	-3	-22	-26	-41	-44	11 11 8 11
18000	39	30	8	19	22	9	7								17 16 9 15
CANNON AFB	TO	11	9	8	8	3	1	-13	-9	-3	-8	-10	-16	-17	1514 N.M.I.
5000	11	9	8	8	3	1	1	-26	-19	-11	-13	-17	-25	-28	10 10 7 8
10000	24	17	10	12	15	7	6	-45	-30	-17	-27	-28	-42	-45	11 11 8 10
18000	39	26	15	22	23	13	11								16 15 9 15

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
+PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.*												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85		
CANNON AFB																
5000	8	6	8	7	7	0	-1	-9	-7	-8	-7	-8	-15	-17	11	1100 N.MI.
10000	17	12	9	10	11	4	2	-20	-14	-9	-12	-14	-22	-24	12	11 8 10
18000	27	19	13	15	17	7	5	-36	-25	-15	-22	-24	-36	-39	18	12 9 11
CANNON AFB																
5000	1	1	2	2	1	-2	-4	-1	-1	-1	-2	-2	-6	-7	8	1069 N.MI.
10000	-13	-7	-3	-6	-7	-14	-16	12	6	3	5	6	0	-1	11	7 5 7
18000	-27	-18	-10	-18	-18	-29	-32	21	13	7	14	12	2	0	18	9 8 9
CANNON AFB																
5000	-1	0	1	-1	0	-6	-7	0	0	-1	0	0	-6	-7	8	1737 N.MI.
10000	-11	-5	-3	-8	-7	-13	-14	8	4	2	6	4	0	-1	8	8 7 8
18000	-18	-9	-5	-13	-11	-23	-22	10	4	2	7	5	-2	-4	13	12 9 12
CARSWELL AFB																
5000	12	9	6	5	7	1	0	-13	-10	-5	-5	-8	-15	-17	11	1031 N.MI.
10000	25	18	6	8	13	5	3	-26	-19	-6	-9	-15	-25	-27	11	10 7 9
18000	41	30	7	20	22	9	7	-44	-33	-7	-22	-26	-41	-45	17	11 8 11
CARSWELL AFB																
5000	7	6	6	4	5	-1	-3	-9	-7	-6	-5	-7	-15	-16	13	715 N.MI.
10000	14	10	6	7	9	0	-1	-18	-13	-6	-9	-12	-20	-23	13	12 9 10
18000	21	15	8	10	12	1	-1	-33	-22	-10	-16	-19	-33	-37	20	13 10 12
CARSWELL AFB																
5000	-1	0	2	-1	0	-6	-8	0	0	-2	0	-1	-7	-8	10	1565 N.MI.
10000	-5	-2	-1	-4	-4	-10	-11	0	0	0	1	0	-6	-7	9	9 8 9
18000	-9	-5	-2	-7	-6	-15	-17	-3	-2	-1	0	-2	-11	-13	15	10 8 9
CARSWELL AFB																
5000	-6	-6	-8	-2	-6	-14	-15	5	6	9	1	5	-2	-4	13	304 N.MI.
10000	-6	-5	-3	-1	-4	-12	-14	3	3	4	1	2	-4	-6	12	8 11
18000	-11	-6	-3	-1	-5	-16	-19	-1	-2	3	-2	0	-11	-14	12	9 12
CARSWELL AFB																
5000	13	9	6	8	8	1	0	-14	-10	-6	-6	-9	-16	-18	11	1131 N.MI.
10000	25	18	8	10	14	6	4	-27	-20	-9	-11	-16	-26	-28	12	11 7 9
18000	41	28	11	21	23	11	9	-46	-32	-12	-25	-27	-43	-47	17	12 8 11
CARSWELL AFB																
5000	-5	-2	0	-4	-3	-9	-10	3	1	0	3	1	-4	-5	9	1425 N.MI.
10000	-14	-7	-4	-10	-9	-16	-17	12	6	3	8	7	0	0	10	9 7 8
18000	-25	-15	-8	-18	-16	-27	-29	16	9	5	13	10	1	-1	15	9 8 9

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS										STANDARD DEVIATION			
	DIRECT					RETURN					JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85
CARSWELL AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	8	6	3	4	5	-2	-3	-9	-7	-3	-4	-6	-13	-15
10000	19	14	1	7	9	0	-1	-20	-15	-1	-8	-11	-21	-23
18000	33	28	1	16	18	4	1	-38	-30	-1	-18	-21	-37	-41
CARSWELL AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	0	-1	-4	1	-1	-9	-11	-1	0	4	-1	0	-7	-9
10000	4	2	-3	2	0	-7	-9	-8	-5	3	-3	-3	-12	-14
18000	8	9	-3	7	3	-7	-9	-20	-17	3	-11	-10	-24	-28
CARSWELL AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-4	-1	2	-3	-2	-9	-11	3	0	-2	2	0	-7	-8
10000	-11	-6	-1	-7	-4	-15	-17	7	4	0	4	3	-3	-5
18000	-21	-12	-5	-14	-13	-25	-28	4	5	3	4	5	-4	-7
CARSWELL AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-3	-1	0	-2	-7	-8	-8	2	3	1	-1	0	-4	-5
10000	-15	-12	-2	-6	-9	-16	-18	14	12	3	6	8	1	0
18000	-23	-28	-7	-16	-20	-33	-37	30	25	5	14	17	6	4
CARSWELL AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	7	5	2	4	4	-3	-5	-8	-6	-2	-4	-5	-13	-15
10000	18	13	0	7	8	0	-2	-19	-14	0	-8	-10	-20	-23
18000	31	26	0	16	16	2	0	-36	-29	0	-18	-20	-37	-41
CARSWELL AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	8	4	5	6	0	-2	-11	-9	-4	-5	-7	-15	-17
10000	22	16	3	8	11	2	0	-23	-17	-3	-9	-13	-23	-25
18000	39	30	3	18	20	4	3	-41	-32	-4	-20	-24	-40	-44
CARSWELL AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-7	-5	-3	-3	-5	-12	-14	6	5	3	3	4	-2	-4
10000	-14	-15	-1	-7	-11	-20	-22	18	14	1	7	9	1	0
18000	-37	-30	-4	-17	-21	-37	-40	34	28	4	15	18	5	2
CARSWELL AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	12	9	6	5	7	1	0	-13	-10	-6	-5	-9	-16	-18
10000	25	18	6	9	13	2	6	-26	-19	-6	-9	-14	-25	-27
18000	41	30	7	20	22	9	6	-44	-33	-7	-22	-26	-42	-45
CARSWELL AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	11	9	7	5	7	0	-1	-12	-10	-7	-5	-9	-17	-19
10000	23	16	6	9	12	3	1	-24	-17	-6	-10	-14	-24	-27
18000	37	26	7	17	19	6	4	-42	-31	-7	-21	-24	-41	-45

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00450--DEUTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.										STANDARD DEVIATION			
	DIRECT					RETURN					JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00ASD	A75	A85	JAN	APR	JUL	OCT	00ASD	A75	A85
CARSWELL AFB	FORT CARSON										503 N.M.I.			
5000	-3	-1	1	-2	-1	-4	-11	2	0	-2	2	0	-7	-9
10000	-14	-10	-1	-7	-8	-17	-20	13	8	1	6	6	-1	-3
18000	-30	-23	-6	-17	-18	-32	-36	21	16	5	14	12	1	-1
CARSWELL AFB	FORT EUSTIS										1065 N.M.I.			
5000	13	10	6	6	8	2	0	-13	-10	-6	-6	-9	-16	-17
10000	25	18	8	9	14	5	4	-27	-20	-8	-10	-16	-26	-28
18000	42	28	10	21	23	11	8	-46	-32	-11	-24	-27	-43	-46
CARSWELL AFB	FORT HUACHUCA										650 N.M.I.			
5000	-5	-4	-1	-1	-3	-9	-11	4	4	1	1	2	-3	-4
10000	-19	-14	-1	-7	-10	-19	-21	17	13	1	6	8	0	0
18000	-35	-29	-4	-16	-20	-35	-38	32	27	4	14	17	5	2
CARSWELL AFB	FORT KNICK										640 N.M.I.			
5000	11	9	7	5	7	0	-1	-12	-10	-7	-6	-9	-16	-18
10000	22	16	6	9	12	3	1	-24	-17	-7	-10	-14	-24	-27
18000	36	24	9	17	19	7	4	-42	-30	-9	-21	-24	-40	-44
CARSWELL AFB	FORT LEAVENWORTH										415 N.M.I.			
5000	3	4	6	1	3	-4	-6	-4	-5	-7	-2	-5	-13	-15
10000	5	4	3	1	3	-5	-7	-10	-7	-4	-3	-6	-15	-17
18000	4	4	3	0	2	-8	-11	-20	-14	-4	-7	-11	-24	-27
CARSWELL AFB	FORT LEWIS										1430 N.M.I.			
5000	-1	0	0	0	0	-5	-6	0	0	0	0	0	-4	-5
10000	-15	-9	-4	-8	-9	-16	-18	13	8	3	7	7	1	0
18000	-30	-20	-11	-20	-20	-31	-34	23	16	9	16	15	5	3
CARSWELL AFB	FORT ORD										1218 N.M.I.			
5000	-3	-3	0	0	-2	-6	-8	2	2	0	0	0	-3	-5
10000	-15	-12	-3	-7	-9	-16	-18	14	11	3	7	8	1	0
18000	-32	-26	-9	-17	-20	-32	-36	28	23	8	14	16	6	4
CARSWELL AFB	FORT RUCKER										618 N.M.I.			
5000	9	7	3	4	5	-1	-3	-10	-8	-3	-4	-6	-14	-16
10000	20	15	2	8	10	1	0	-21	-16	-2	-8	-12	-22	-24
18000	35	29	2	17	19	5	2	-39	-31	-2	-19	-22	-38	-42
CARSWELL AFB	GEN MITCHELL										751 N.M.I.			
5000	7	4	6	4	5	-1	-3	-8	-7	-6	-5	-7	-14	-16
10000	13	9	6	6	8	0	-1	-17	-12	-6	-8	-11	-20	-22
18000	19	13	8	8	11	0	-2	-32	-21	-9	-15	-18	-32	-36

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 **A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN DENOTES TAILWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION				
	DIRECT					RETURN					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	00450	A75	A95	JAN	APR	JUL	OCT	00450	A75	A95	
CARSWELL AFR	TO	WILL AFR													
5000	-1	0	2	0	0	-5	-6	0	0	-2	0	-1	-6	-8	856 N.M.I.
10000	-15	-10	-2	-3	-9	-16	-18	13	8	2	7	7	0	-1	9
18000	-31	-23	-8	-19	-19	-32	-36	24	18	7	16	14	4	2	11
CARSWELL AFR	TO	HOMESTEAD AFR													19
5000	1	2	0	1	0	-4	-6	-3	-3	0	-1	-2	-7	-9	994 N.M.I.
10000	12	9	0	4	5	-1	-2	-14	-11	0	-4	-7	-15	-17	10
18000	25	23	0	11	13	1	0	-30	-24	0	-13	-17	-30	-33	10
CARSWELL AFR	TO	MUNTER AAF													14
5000	17	8	4	4	6	0	-1	-11	-8	-4	-5	-7	-14	-16	9
10000	22	16	4	7	11	3	1	-22	-17	-4	-8	-12	-22	-24	11
18000	37	29	4	14	20	7	4	-41	-32	-4	-20	-24	-39	-43	12
CARSWELL AFR	TO	MUNTSVILLE													17
5000	11	9	6	5	7	0	-1	-12	-10	-6	-5	-8	-16	-18	827 N.M.I.
10000	23	17	5	9	12	3	1	-24	-18	-5	-10	-14	-24	-27	11
18000	39	29	5	19	21	7	4	-43	-32	-5	-21	-24	-41	-45	12
CARSWELL AFR	TO	JACKSONVILLE													13
5000	8	7	3	4	5	-1	-2	-9	-7	-3	-4	-6	-13	-14	13
10000	19	15	2	7	10	2	0	-21	-16	-2	-7	-11	-21	-23	13
18000	35	28	2	17	19	5	2	-38	-31	-3	-19	-22	-37	-41	20
CARSWELL AFR	TO	KEY WEST													18
5000	0	1	-1	0	0	-5	-7	-1	-2	1	-1	-1	-7	-8	819 N.M.I.
10000	10	8	-1	4	4	-2	-3	-12	-9	1	-4	-6	-13	-15	11
18000	21	21	-1	10	11	0	-1	-27	-24	1	-12	-15	-28	-31	11
CARSWELL AFR	TO	LARSON AFR													17
5000	-1	0	0	0	0	-5	-7	-1	-2	0	0	0	-5	-6	959 N.M.I.
10000	-15	-9	-3	-8	-9	-16	-17	-12	-9	1	-4	-6	-13	-15	10
18000	-29	-20	-11	-20	-20	-31	-34	-27	-24	1	-12	-15	-28	-31	10
CARSWELL AFR	TO	LITTLE ROCK													14
5000	10	8	7	5	7	0	-2	0	0	0	0	0	-5	-6	1319 N.M.I.
10000	21	16	5	8	11	2	0	13	8	3	7	7	1	0	8
18000	35	26	5	16	18	5	2	23	15	8	16	14	5	2	10
CARSWELL AFR	TO	LOCKPORT													16
5000	11	9	7	6	8	1	0	-11	-9	-7	-5	-8	-16	-18	294 N.M.I.
10000	22	16	7	10	13	4	2	-23	-17	-5	-9	-13	-24	-26	14
18000	36	24	10	19	20	8	6	-40	-30	-5	-19	-22	-39	-43	14
CARSWELL AFR	TO	LOCKPORT													21
5000	11	9	7	6	8	1	0	-12	-9	-6	-6	-8	-16	-18	814 N.M.I.
10000	22	16	7	10	13	4	2	-25	-17	-8	-11	-15	-25	-27	12
18000	36	24	10	19	20	8	6	-43	-29	-11	-22	-25	-40	-44	13

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

+MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET		EQUVALENT HEADWIND SO RETURN										STANDARD DEVIATION							
		DIRECT				RETURN													
		JAN	APR	JUL	OCT	00ASO	A75	A95	JAN	APR	JUL	OCT	00ASO	A75	A95	JAN	APR	JUL	OCT
CAPSWELL AFB	TO																		
	SCCO	11	7	7	8	8	2	0	-13	-8	-8	-8	-10	-16	-17	10	10	7	8
	LOGCO	21	14	10	12	13	6	5	-24	-16	-11	-14	-16	-24	-26	11	11	8	10
	18COO	34	20	14	20	20	11	8	-42	-27	-17	-26	-27	-39	-43	16	15	9	15
CAPSWELL AFB	TO																		
	SCCO	-3	-3	0	0	-2	-7	-9	2	2	0	0	0	-4	-5	10	9	6	8
	LOGCO	-17	-13	-2	-7	-10	-18	-20	16	13	2	6	8	1	0	12	10	8	10
	18COO	-34	-29	-6	-16	-20	-35	-38	31	26	5	15	17	5	3	19	16	10	15
CAPSWELL AFB	TO																		
	SCCO	12	9	7	4	8	1	0	-14	-10	-5	-7	-9	-16	-18	11	11	7	9
	LOGCO	24	18	9	10	14	6	4	-27	-20	-9	-11	-16	-26	-28	12	12	8	11
	18COO	41	27	12	22	23	12	9	-46	-32	-13	-26	-28	-43	-47	17	17	9	16
CAPSWELL AFB	TO																		
	SCCO	11	9	7	5	7	0	-2	-11	-9	-7	-5	-8	-16	-18	14	13	9	11
	LOGCO	23	17	5	9	12	3	1	-24	-17	-5	-10	-14	-24	-27	13	13	10	13
	18COO	34	28	6	17	20	6	3	-42	-31	-6	-20	-23	-40	-45	21	19	11	18
CAPSWELL AFB	TO																		
	SCCO	-7	-9	-2	-1	-7	-12	-14	7	8	7	1	5	0	-1	10	9	6	9
	LOGCO	-7	-5	-2	-2	-4	-10	-12	5	5	3	1	3	-2	-3	9	9	7	9
	18COO	-13	-8	-2	-4	-6	-15	-17	6	3	2	2	3	-4	-6	14	13	7	12
CAPSWELL AFB	TO																		
	SCCO	1	2	5	0	2	-5	-7	-2	-3	-5	-1	-3	-11	-13	12	12	9	11
	LOGCO	2	2	2	0	1	-6	-8	-7	-4	-3	-2	-5	-13	-15	13	13	10	12
	18COO	0	1	2	-1	0	-10	-13	-16	-11	-5	-6	-9	-21	-24	20	18	11	18
CAPSWELL AFB	TO																		
	SCCO	-4	-1	1	-4	-2	-4	-11	3	0	-2	3	0	-6	-8	11	11	9	10
	LOGCO	-9	-5	-1	-6	-6	-13	-15	4	3	0	4	2	-4	-6	12	12	9	11
	18COO	-16	-10	-4	-12	-17	-22	-24	3	2	1	5	2	-7	-10	18	17	11	16
CAPSWELL AFB	TO																		
	SCCO	-2	-2	0	0	-1	-6	-4	1	1	0	0	0	-5	-6	9	8	6	8
	LOGCO	-14	-12	-3	-7	-10	-17	-19	15	12	3	7	8	1	0	11	10	8	10
	18COO	-34	-27	-8	-17	-20	-34	-37	29	24	7	15	17	6	4	18	16	10	15
CAPSWELL AFB	TO																		
	SCCO	12	9	7	6	8	1	0	-13	-10	-8	-7	-9	-16	-18	11	11	7	9
	LOGCO	25	17	9	10	14	6	4	-27	-19	-9	-11	-16	-26	-28	12	12	9	11
	18COO	40	26	11	21	22	10	8	-46	-31	-12	-25	-27	-42	-46	18	17	10	16

•EARNINGS--COMPUTED FOR A 120-HR AVERAGE.
•••A--REPRESENTS ANNUAL EQUIVALENT HEADWINDS AND INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*												STANDARD DEVIATION				
	DIRECT				RETURN				RETURN								
	JAN	APR	JUL	OCT	JAN	APR	JUL	OCT	JAN	APR	JUL	OCT					
CARSWELL AFB													412 N.M.I.				
5000	6	4	1	3	3	-3	-5	-7	-5	-1	-4	-4	-12	12	12	8	11
10000	16	12	0	6	8	0	-2	-18	-13	0	-7	-10	-19	12	12	9	12
18000	29	25	0	15	15	1	-1	-35	-29	0	-17	-19	-36	19	18	13	17
CARSWELL AFB													1069 N.M.I.				
5000	11	7	6	6	7	0	-1	-12	-9	-6	-7	-9	-16	12	11	8	9
10000	21	14	8	10	12	4	3	-24	-16	-9	-12	-15	-24	12	12	9	11
18000	33	20	11	18	18	8	5	-42	-27	-13	-23	-25	-39	18	17	10	17
CARSWELL AFB													1084 N.M.I.				
5000	-3	-3	0	0	-2	-6	-8	3	2	1	-1	0	-3	8	8	5	7
10000	-15	-12	-3	-6	-9	-16	-18	14	12	3	6	8	1	11	9	7	9
18000	-33	-27	-8	-16	-20	-33	-36	29	24	7	14	16	6	17	15	9	14
CARSWELL AFB													911 N.M.I.				
5000	5	5	2	3	3	-2	-3	-6	-6	-2	-4	-5	-11	10	10	7	9
10000	16	13	1	6	8	0	0	-18	-14	-1	-6	-9	-18	11	11	7	10
18000	31	26	1	15	17	4	1	-35	-29	-1	-17	-20	-35	16	15	8	14
CARSWELL AFB													948 N.M.I.				
5000	11	9	6	6	7	0	0	-13	-10	-6	-7	-9	-16	12	11	8	10
10000	23	16	8	10	13	5	3	-25	-18	-9	-11	-16	-25	12	12	9	12
18000	37	24	11	19	20	9	6	-44	-29	-12	-24	-26	-41	18	18	10	17
CARSWELL AFB													1107 N.M.I.				
5000	-5	-1	1	-4	-2	-9	-11	3	0	-1	3	0	-5	10	11	8	10
10000	-11	-6	-2	-8	-7	-14	-16	7	4	1	6	4	-2	11	11	9	10
18000	-20	-12	-6	-15	-13	-24	-27	8	5	2	8	5	-4	17	16	10	15
CARSWELL AFB													503 N.M.I.				
5000	9	8	7	4	6	0	-2	-10	-8	-7	-5	-8	-16	13	13	9	11
10000	17	12	6	7	10	1	0	-20	-14	-6	-9	-12	-22	13	13	10	13
18000	27	19	7	12	14	3	0	-37	-25	-8	-17	-20	-36	21	19	11	18
CARSWELL AFB													909 N.M.I.				
5000	10	7	6	6	7	0	-1	-11	-8	-5	-6	-8	-15	12	12	9	10
10000	19	13	7	9	11	3	1	-22	-15	-3	-11	-14	-23	12	13	9	12
18000	29	19	10	15	16	6	3	-39	-26	-12	-21	-23	-37	19	18	10	17
CARSWELL AFB													852 N.M.I.				
5000	11	9	5	5	7	0	-1	-12	-10	-5	-5	-8	-15	11	11	8	10
10000	24	18	5	8	12	4	2	-24	-19	-5	-9	-14	-24	12	12	8	12
18000	40	30	6	19	21	8	5	-43	-33	-8	-22	-25	-41	18	17	9	16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

****A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.**

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AT STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85
FOLIN AFR														
CHEFFY PT MCAS TO	-9	-4	-4	-4	-8	-15	-17	11	8	5	3	6	0	-2
5000	-12	-9	-4	-4	-8	-15	-17	20	17	5	6	11	2	0
10000	-22	-18	-5	-6	-12	-22	-25	35	25	6	19	19	6	4
18000	-40	-30	-6	-20	-23	-39	-43							
ELLINGTON AFR														
CHEFFY PT MCAS TO	-9	-4	-4	-4	-7	-14	-16	12	9	5	4	7	1	0
5000	-12	-9	-4	-4	-7	-14	-16	22	17	5	7	11	3	2
10000	-23	-18	-5	-7	-13	-22	-25	38	28	3	18	20	6	3
18000	-41	-31	-3	-20	-23	-39	-42							
ELLSWORTH AFR														
CHEFFY PT MCAS TO	-9	-6	-6	-3	-9	-16	-17	12	8	6	7	8	1	0
5000	-13	-9	-6	-3	-9	-16	-17	22	14	10	11	13	6	4
10000	-24	-16	-11	-13	-14	-24	-26	33	23	16	22	22	12	10
18000	-41	-28	-18	-27	-28	-40	-43							
ENGLAND AFR														
CHEFFY PT MCAS TO	-10	-5	-4	-4	-8	-15	-17	12	9	5	4	7	0	-1
5000	-13	-10	-5	-4	-8	-15	-17	23	18	6	7	12	4	2
10000	-24	-19	-6	-8	-14	-24	-26	40	29	5	19	21	7	5
18000	-43	-32	-6	-22	-25	-41	-45							
FORT BENNING														
CHEFFY PT MCAS TO	-5	-4	-4	-4	-8	-16	-18	12	9	5	4	7	0	-1
5000	-13	-10	-5	-4	-8	-16	-18	23	19	6	6	12	3	1
10000	-25	-20	-6	-7	-14	-25	-28	40	28	8	20	21	8	6
18000	-43	-32	-8	-22	-25	-42	-46							
FORT BLISS														
CHEFFY PT MCAS TO	-5	-5	-5	-5	-8	-13	-15	10	8	5	4	6	1	0
5000	-11	-9	-5	-5	-8	-13	-15	23	17	5	8	12	4	3
10000	-24	-18	-5	-9	-14	-23	-25	39	30	7	18	22	9	7
18000	-42	-32	-7	-21	-25	-39	-42							
FORT CAMPBELL														
CHEFFY PT MCAS TO	-6	-6	-6	-6	-9	-17	-19	14	10	6	5	8	0	0
5000	-14	-11	-6	-6	-9	-17	-19	26	20	8	8	14	5	3
10000	-28	-21	-8	-9	-14	-27	-30	40	31	12	21	24	11	8
18000	-46	-34	-12	-25	-28	-45	-49							
FORT CARSON														
CHEFFY PT MCAS TO	-9	-6	-6	-6	-9	-15	-17	11	8	6	6	7	1	0
5000	-12	-9	-6	-6	-9	-15	-17	23	16	8	10	13	6	4
10000	-25	-18	-8	-11	-15	-24	-26	38	28	13	22	23	12	10
18000	-43	-31	-14	-25	-27	-41	-44							
FORT EUSTIS														
CHEFFY PT MCAS TO	0	0	0	0	0	-8	-10	-2	-1	0	-1	-1	-10	-12
5000	0	0	0	0	0	-8	-10	-4	-6	-2	-3	-4	-13	-16
10000	-3	0	1	1	0	-9	-12	-18	-7	-2	-11	-9	-23	-27
18000	-2	-5	0	3	-1	-14	-17							

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION			
	DIRECT						RETURN						JAN APR JUL OCT			
	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT
CHEERY PT MCAS TO 5000 -13 -10 -5 -5 -8 -15 -17 10000 -24 -19 -8 -8 -14 -23 -26 18000 -43 -32 -5 -21 -25 -40 -44																
CHEERY PT MCAS TO 5000 -10 -8 -5 -4 -7 -12 -14 10000 -23 -13 -5 -9 -14 -22 -24 18000 -41 -32 -8 -21 -25 -39 -42																
CHEERY PT MCAS TO 5000 -14 -10 -6 -6 -9 -17 -19 10000 -27 -20 -9 -9 -16 -27 -29 18000 -44 -33 -13 -24 -27 -44 -48																
CHEERY PT MCAS TO 5000 -14 -10 -6 -7 -9 -17 -19 10000 -27 -19 -9 -11 -16 -26 -29 18000 -45 -32 -14 -24 -28 -43 -47																
CHEERY PT MCAS TO 5000 -12 -9 -4 -4 -7 -15 -17 10000 -23 -18 -6 -6 -13 -23 -26 18000 -41 -30 -7 -21 -23 -40 -44																
CHEERY PT MCAS TO 5000 -13 -10 -6 -6 -9 -16 -17 10000 -27 -20 -7 -10 -15 -26 -28 18000 -45 -34 -9 -24 -27 -43 -46																
CHEERY PT MCAS TO 5000 -13 -10 -6 -5 -9 -15 -17 10000 -26 -19 -6 -9 -15 -25 -27 18000 -44 -33 -7 -22 -26 -41 -45																
CHEERY PT MCAS TO 5000 0 0 1 2 0 -5 -6 10000 0 0 0 1 0 -6 -8 18000 2 -1 0 1 0 -8 -10																
CHEERY PT MCAS TO 5000 -12 -9 -5 -6 -8 -14 -18 10000 -24 -17 -10 -9 -15 -25 -27 18000 -40 -23 -14 -22 -25 -40 -44																

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**--MINUTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

EIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS										STANDARD DEVIATION				
	DIRECT					RETURN					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	
CHEFFY PT MCAS TO HILL AFB															1688 N.M.I.
5000	-10	-7	-4	-5	-7	-12	-13	8	7	4	5	5	0	0	9
10000	-23	-15	-9	-12	-15	-22	-24	21	14	9	11	13	6	5	10
15000	-40	-29	-16	-25	-27	-39	-42	34	25	15	22	22	13	11	15
CHEFFY PT MCAS TO HOMESTEAD AFB															595 N.M.I.
5000	-6	-5	-3	-2	-4	-11	-12	5	5	3	2	3	-2	-4	11
10000	-8	-8	-3	-4	-6	-13	-15	5	5	3	3	3	-3	-5	12
15000	-16	-12	-4	-10	-10	-20	-23	4	3	3	7	4	-4	-7	17
CHEFFY PT MCAS TO HUNTER AAF															274 N.M.I.
5000	-11	-9	-4	-3	-7	-14	-17	10	3	4	3	6	-1	-3	12
10000	-21	-17	-5	-6	-12	-22	-25	18	15	5	5	10	1	0	14
15000	-39	-28	-8	-20	-22	-38	-42	31	22	7	17	17	5	2	20
CHEFFY PT MCAS TO HUNTSVILLE															488 N.M.I.
5000	-14	-11	-5	-5	-9	-17	-19	14	10	6	5	8	1	0	12
10000	-27	-21	-7	-8	-15	-26	-29	26	20	7	7	13	4	2	14
15000	-46	-35	-10	-24	-27	-45	-49	43	32	10	21	24	10	7	20
CHEFFY PT MCAS TO JACKSONVILLE															361 N.M.I.
5000	-10	-8	-4	-3	-6	-14	-16	9	7	4	3	5	-1	-3	12
10000	-19	-15	-4	-5	-10	-20	-23	14	13	4	4	8	0	-2	14
15000	-33	-24	-6	-18	-19	-34	-38	24	17	6	14	13	2	0	19
CHEFFY PT MCAS TO KEY WEST															671 N.M.I.
5000	-6	-6	-3	-3	-5	-11	-13	5	5	3	2	3	-2	-4	10
10000	-9	-8	-3	-4	-6	-13	-15	6	6	3	3	4	-2	-4	12
15000	-17	-13	-4	-10	-10	-21	-24	7	5	4	7	5	-3	-5	16
CHEFFY PT MCAS TO LITTLE ROCK															750 N.M.I.
5000	-14	-11	-5	-5	-9	-16	-18	14	10	6	5	8	1	0	12
10000	-21	-17	-7	-10	-16	-27	-29	26	20	7	9	14	5	3	13
15000	-45	-34	-10	-24	-27	-44	-48	42	31	10	21	23	11	8	19
CHEFFY PT MCAS TO LOCKPORT															406 N.M.I.
5000	-11	-9	-5	-5	-8	-16	-18	10	9	5	4	6	-1	-3	13
10000	-23	-17	-8	-6	-13	-24	-27	19	13	7	5	10	1	-1	15
15000	-38	-29	-11	-19	-23	-39	-43	23	21	10	12	15	3	0	21
CHEFFY PT MCAS TO LORING AFB															829 N.M.I.
5000	5	4	4	4	4	-3	-5	-8	-6	-5	-5	-6	-14	-16	13
10000	10	9	6	8	8	0	-2	-17	-13	-8	-10	-12	-21	-24	15
15000	14	9	8	15	12	0	-2	-35	-20	-12	-23	-22	-34	-40	20

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DEFINIES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.										STANDARD DEVIATION			
	DIRECT					RETURN					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	***A50	A75	A85	JAN	APR	JUL	OCT	***A50	A75	A85
LUKE AFB														
CHEPPY PT MCAS	TO													
5000	-9	-8	-5	-4	-7	-12	-13	8	7	5	3	5	0	0
10000	-23	-18	-6	-9	-14	-22	-24	21	17	6	9	12	5	4
18000	-41	-32	-10	-21	-25	-39	-42	37	29	10	19	22	11	9
1754 N.M.I.														
9														
8														
10														
13														
8														
13														
327 N.M.I.														
14														
13														
9														
12														
16														
10														
14														
22														
22														
12														
21														
644 N.M.I.														
12														
12														
13														
13														
9														
10														
10														
18														
1501 N.M.I.														
8														
8														
5														
6														
8														
12														
11														
6														
10														
958 N.M.I.														
12														
11														
13														
13														
9														
12														
19														
18														
11														
18														
1348 N.M.I.														
10														
10														
8														
11														
11														
8														
16														
16														
10														
16														
1851 N.M.I.														
8														
8														
6														
7														
9														
14														
13														
8														
13														
319 N.M.I.														
14														
13														
9														
16														
16														
10														
14														
22														
22														
12														
21														
728 N.M.I.														
11														
11														
7														
10														
12														
9														
17														
17														
9														
16														

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWIND IN KNOTS*												STANDARD DEVIATION			
		DIRECT						RETURN									
		JAN	APR	JUL	OCT	A75	A85	JAN	APR	JUL	OCT	A75	A85	JAN	APR	JUL	OCT
CHEPPY PT MCAS	TO	NIAGARA FALLS															
5000	-4	-2	-1	-3	-11	-13		1	2	1	0	1	-6	-8	13	13	501 N.M.I.
10000	-6	-3	-1	-5	-15	-17		1	0	1	0	0	-8	-11	15	15	12
18000	-15	-5	-5	-10	-23	-27		-5	3	2	-4	-1	-13	-17	21	21	14
CHEPPY PT MCAS	TO	PATRICK AFB															
5000	-8	-3	-2	-5	-12	-14		7	5	3	2	4	-2	-4	14	11	442 N.M.I.
10000	-12	-3	-4	-7	-16	-18		8	3	3	3	5	-2	-4	13	13	8
18000	-23	-4	-13	-26	-29		11	3	4	9	7	-2	-5		18	18	12
CHEPPY PT MCAS	TO	PITTSBURGH															
5000	-7	-3	-2	-5	-13	-15		5	4	3	1	3	-4	-6	14	13	371 N.M.I.
10000	-17	-5	-3	-9	-19	-22		9	5	4	1	4	-4	-6	15	15	9
18000	-28	-8	-11	-31	-35		7	11	5	2	6	-6	-9		22	21	10
CHEPPY PT MCAS	TO	REGINA															
5000	-12	-7	-5	-8	-15	-16		10	6	5	7	6	0	0	10	10	1525 N.M.I.
10000	-22	-14	-12	-13	-23	-25		20	12	11	11	13	6	4	10	11	7
18000	-37	-25	-18	-25	-37	-40		28	20	16	19	20	10	8	15	15	8
CHEPPY PT MCAS	TO	SCOTT AFB															
5000	-14	-10	-6	-6	-9	-17		13	10	6	6	8	1	0	12	12	666 N.M.I.
10000	-27	-20	-9	-10	-27	-29		25	18	9	9	14	5	3	14	14	8
18000	-45	-33	-13	-25	-44	-48		38	29	13	21	23	11	8	19	19	10
CHEPPY PT MCAS	TO	SELFRIDGE AFB															
5000	-7	-4	-3	-6	-14	-16		6	5	4	2	4	-3	-5	13	13	539 N.M.I.
10000	-9	-13	-7	-5	-11	-23		12	8	6	3	7	-1	-4	15	15	9
18000	-32	-24	-10	-15	-34	-38		13	14	9	6	9	-2	-5	21	21	11
CHEPPY PT MCAS	TO	SHAW AFB															
5000	-14	-10	-5	-4	-8	-17		13	10	7	4	7	0	-2	13	12	186 N.M.I.
10000	-26	-21	-7	-7	-15	-26		24	20	7	6	13	3	1	15	15	9
18000	-45	-33	-10	-24	-46	-48		42	30	10	21	23	9	6	21	21	12
CHEPPY PT MCAS	TO	WESTOVER AFB															
5000	5	3	3	3	3	-6		-7	-5	-4	-4	-5	-13	-16	14	13	483 N.M.I.
10000	8	9	5	6	6	-2		-16	-14	-7	-8	-11	-21	-24	16	16	9
18000	15	6	6	12	9	-2		-33	-18	-9	-20	-19	-34	-38	21	21	10
CHEPPY PT MCAS	TO	MURKOWITH															
5000	-8	-6	-4	-3	-6	-13		6	5	4	2	4	-3	-5	13	12	647 N.M.I.
10000	-17	-12	-7	-6	-11	-20		10	7	6	3	6	-2	-4	14	14	9
18000	-30	-22	-11	-14	-19	-32		10	12	8	5	8	-3	-6	21	20	11

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EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.*										STANDARD DEVIATION			
	DIRECT					RETURN					JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85
CHICAGO 5000	-4	-3	-2	-4	-4	-11	-13	2	2	1	2	1	-5	-7
10000	-11	-6	-8	-8	-9	-16	-18	8	4	5	6	5	-1	-3
18000	-18	-12	-13	-14	-15	-25	-28	8	7	8	7	7	-2	-5
CHICAGO 5000	-9	-7	-6	-4	-7	-14	-15	7	5	5	3	5	-1	-2
10000	-15	-11	-4	-6	-9	-17	-19	11	8	4	4	6	0	-2
18000	-29	-19	-5	-12	-15	-28	-32	16	10	4	6	8	-1	-3
CHICAGO 5000	14	10	7	9	9	1	0	-15	-11	-7	-9	-11	-19	-21
10000	28	19	14	12	17	8	5	-30	-21	-14	-14	-20	-30	-33
18000	43	28	20	25	27	14	11	-49	-33	-21	-30	-32	-48	-52
CHICAGO 5000	-11	-5	-4	-9	-8	-15	-17	10	4	4	8	6	0	-2
10000	-21	-12	-12	-16	-16	-23	-25	19	11	12	15	14	7	5
18000	-32	-21	-19	-26	-24	-35	-38	28	17	17	23	20	11	8
CHICAGO 5000	-1	0	0	0	0	-8	-9	0	0	0	0	0	-7	-9
10000	-2	0	0	0	-1	-9	-11	-3	-3	0	-1	-2	-10	-12
18000	-9	-2	1	-1	-2	-14	-17	-10	-9	-3	-6	-7	-18	-22
CHICAGO 5000	-8	-6	-5	-3	-6	-13	-15	6	5	5	2	4	-2	-4
10000	-15	-10	-5	-6	-9	-17	-20	10	7	4	4	6	-1	-3
18000	-28	-17	-3	-11	-14	-27	-31	13	8	1	4	5	-4	-7
CHICAGO 5000	-13	-8	-6	-10	-10	-18	-20	12	7	6	9	8	0	-1
10000	-23	-14	-13	-14	-17	-26	-28	22	12	13	15	15	6	4
18000	-38	-26	-23	-29	-29	-41	-45	34	22	22	26	25	13	11
CHICAGO 5000	-4	-6	-5	-3	-5	-10	-12	5	5	5	3	4	0	-1
10000	-16	-11	-9	-10	-12	-18	-20	14	10	8	9	10	4	2
18000	-33	-25	-17	-21	-23	-34	-37	27	21	16	17	19	10	8
CHICAGO 5000	-7	-5	-3	-2	-5	-12	-14	5	3	3	2	3	-3	-5
10000	-13	-8	-4	-5	-8	-16	-19	7	4	3	3	4	-4	-6
18000	-26	-15	-3	-10	-12	-26	-30	9	4	0	2	3	-7	-10

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EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION												
	DIRECT						RETURN						JAN						JAN						
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	JAN	APR	JUL	OCT	**A50	A75	A85
CHICAGO																									
5000	1	1	0	1	3	-6	-8	-3	-3	-1	-2	-3	-10	-12	13	12	9	11	13	12	9	11	13	12	9
10000	1	2	1	1	1	-7	-9	-8	-6	-2	-3	-5	-14	-16	14	14	10	13	14	14	10	13	14	14	10
18000	-2	2	3	2	1	-10	-13	-17	-14	-5	-10	-11	-24	-27	20	20	11	19	20	20	11	19	20	20	11
CHICAGO																									
5000	-9	-7	-7	-6	-8	-14	-15	7	7	7	6	6	0	0	11	10	7	9	11	10	7	9	11	10	7
10000	-19	-14	-7	-10	-13	-21	-23	16	13	7	9	11	3	1	11	11	9	11	11	11	9	11	11	11	9
18000	-35	-26	-12	-19	-22	-35	-38	27	21	11	14	17	7	4	18	16	10	16	18	16	10	16	18	16	10
CHICAGO																									
5000	9	7	5	5	6	-1	-3	-11	-8	-5	-5	-8	-15	-17	13	12	9	11	13	12	9	11	13	12	9
10000	19	13	8	7	11	2	0	-23	-16	-9	-8	-14	-24	-26	14	14	10	13	14	14	10	13	14	14	10
18000	24	20	11	15	16	4	1	-38	-27	-13	-22	-24	-39	-43	20	20	12	20	20	20	12	20	20	20	12
CHICAGO																									
5000	0	0	0	0	0	-9	-11	-2	-1	0	0	-1	-9	-12	15	14	10	12	15	14	10	12	15	14	10
10000	-2	0	0	0	-1	-10	-13	-4	-3	-1	-1	-3	-12	-14	15	15	11	14	15	15	11	14	15	14	10
18000	-9	-2	0	-1	-3	-16	-20	-12	-8	-3	-8	-8	-21	-25	22	22	13	21	22	22	13	21	22	22	13
CHICAGO																									
5000	-9	-8	-7	-8	-8	-16	-17	8	7	7	8	7	0	-1	12	11	9	10	12	11	9	10	12	11	9
10000	-21	-13	-11	-13	-15	-23	-26	19	12	10	12	13	4	2	13	13	10	12	13	13	10	12	13	13	10
18000	-36	-27	-19	-25	-26	-40	-43	32	23	18	21	22	11	8	20	19	11	18	20	19	11	18	20	19	11
CHICAGO																									
5000	13	10	7	8	9	1	0	-14	-11	-7	-8	-10	-18	-20	14	13	9	11	14	13	9	11	14	13	9
10000	26	18	13	11	16	6	4	-29	-20	-13	-12	-18	-29	-32	15	15	11	13	15	15	11	13	15	14	10
18000	40	27	18	23	25	12	9	-47	-32	-19	-28	-30	-46	-50	21	21	12	21	21	21	12	21	21	21	12
CHICAGO																									
5000	-9	-7	-6	-4	-7	-14	-16	7	6	6	4	5	-1	-3	12	12	8	10	12	12	8	10	12	12	8
10000	-17	-12	-4	-8	-11	-19	-22	13	9	5	6	8	0	-1	12	13	9	12	12	13	9	12	12	13	9
18000	-32	-21	-3	-15	-18	-31	-35	19	13	6	8	10	0	-2	19	18	10	17	19	18	10	17	19	18	10
CHICAGO																									
5000	-7	-7	-6	-5	-7	-12	-14	7	6	6	5	5	0	-1	10	9	7	8	10	9	7	8	10	9	7
10000	-18	-13	-7	-10	-12	-19	-21	16	12	7	9	10	3	2	11	10	8	10	11	10	8	10	11	10	8
18000	-35	-24	-13	-19	-22	-35	-38	27	21	12	15	17	8	5	17	16	9	15	17	16	9	15	17	16	9
CHICAGO																									
5000	3	3	1	2	2	-6	-9	-5	-4	-2	-3	-4	-13	-15	15	14	10	12	15	14	10	12	15	14	10
10000	6	4	3	3	3	-5	-8	-13	-9	-5	-5	-8	-14	-21	15	15	12	15	15	12	15	15	12	15	12
18000	5	6	5	6	5	-7	-11	-25	-17	-8	-16	-16	-31	-35	23	23	13	23	23	23	13	23	23	23	13

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION				
	DIRECT						RETURN										
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL
CHICAGO 5000	-12	-8	-7	-8	-9	-18	-20	10	7	7	8	7	0	-2	14	14	356 N.M.I.
10000	-23	-15	-11	-14	-16	-26	-29	21	13	10	12	13	4	1	15	15	10 12
18000	-40	-27	-18	-25	-27	-42	-46	33	22	17	20	22	9	6	22	22	12 14
CHICAGO 5000	-11	-6	-4	-8	-8	-14	-15	10	5	4	7	6	0	0	9	9	1502 N.M.I.
10000	-21	-12	-11	-15	-15	-22	-24	20	11	11	14	13	7	5	10	10	7 9
18000	-34	-23	-21	-28	-26	-37	-39	30	19	20	25	23	13	11	15	15	8 9
CHICAGO 5000	-6	-5	-3	-4	-5	-10	-11	5	5	3	3	3	0	-2	8	8	1593 N.M.I.
10000	-17	-11	-9	-11	-12	-19	-20	15	10	9	10	10	4	3	10	9	6 7
18000	-33	-24	-18	-23	-24	-34	-37	27	20	18	19	20	11	9	16	15	7 9
CHICAGO 5000	0	0	0	0	0	-7	-9	-2	-2	0	-1	-2	-9	-11	13	12	656 N.M.I.
10000	0	0	0	0	0	-8	-10	-6	-5	-1	-2	-4	-12	-15	13	14	8 11
18000	-5	0	2	0	0	-11	-14	-14	-11	-4	-8	-9	-21	-24	19	19	10 13
CHICAGO 5000	-10	-8	-7	-6	-8	-16	-18	8	7	7	5	6	-1	-2	13	13	661 N.M.I.
10000	-20	-14	-8	-10	-13	-22	-25	16	12	7	9	10	2	0	13	13	9 11
18000	-36	-24	-12	-19	-22	-36	-40	25	18	10	13	15	4	1	20	19	10 13
CHICAGO 5000	-9	-7	-7	-5	-7	-15	-17	7	6	7	4	6	-1	-3	13	12	734 N.M.I.
10000	-18	-13	-7	-9	-12	-21	-23	15	11	6	7	9	1	0	13	13	9 10
18000	-34	-23	-10	-17	-20	-34	-38	22	15	8	10	12	1	-1	20	19	10 12
CHICAGO 5000	1	0	3	4	2	-4	-4	-3	-1	-4	-6	-4	-11	-12	10	10	1467 N.M.I.
10000	3	0	2	3	2	-4	-6	-7	-2	-4	-6	-5	-12	-14	10	10	9 10
18000	5	2	2	4	3	-5	-8	-15	-7	-7	-11	-10	-20	-22	15	14	9 10
CHICAGO 5000	-8	-6	-5	-7	-7	-13	-15	7	6	5	6	5	0	-1	10	10	1078 N.M.I.
10000	-20	-12	-11	-14	-15	-22	-24	19	11	11	13	13	6	4	11	11	7 9
18000	-36	-25	-21	-26	-27	-38	-41	31	22	20	23	23	13	10	18	17	9 10
CHICAGO 5000	0	0	0	0	0	-4	-7	-1	-2	0	-1	-1	-8	-9	10	10	1058 N.M.I.
10000	3	3	0	1	1	-5	-6	-9	-6	-1	-2	-5	-12	-14	11	11	7 9
18000	4	6	2	3	3	-5	-7	-19	-15	-3	-9	-11	-22	-25	16	16	8 11

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EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
CHICAGO 5000	4	4	2	2	2	2	-4	-6	-7	-5	-2	-3	-5	-12	-14	12	12	680 N.M.I.
10000	9	7	4	3	5	5	-2	-4	-15	-11	-5	-5	-9	-18	-20	13	13	8 11
18000	9	11	6	7	7	7	-2	-5	-27	-20	-8	-15	-17	-30	-33	19	19	9 13
CHICAGO 5000	0	0	0	0	0	0	-8	-10	-2	-2	0	-1	-2	-10	-12	14	13	443 N.M.I.
10000	-1	0	0	0	0	0	-9	-12	-5	-4	-1	-2	-3	-13	-15	14	15	9 11
18000	-7	-1	1	0	-1	-1	-14	-17	-13	-10	-4	-8	-9	-21	-25	21	21	11 14
CHICAGO 5000	2	2	1	2	1	1	-5	-6	-5	-4	-1	-2	-3	-10	-12	12	11	757 N.M.I.
10000	5	5	2	2	3	3	-4	-6	-12	-9	-3	-4	-7	-16	-18	13	13	8 10
18000	5	8	4	5	5	5	-5	-7	-23	-18	-6	-12	-14	-27	-30	19	18	9 12
CHICAGO 5000	-9	-4	-3	-9	-7	-12	-14	-14	8	3	3	8	5	0	-1	8	8	1991 N.M.I.
10000	-18	-10	-10	-15	-14	-20	-21	-21	16	9	10	14	12	6	5	9	8	7 8
18000	-28	-18	-16	-23	-21	-30	-32	-32	24	15	13	20	17	9	7	13	12	9 12
CHICAGO 5000	-1	0	0	0	-1	-7	-8	-8	0	0	0	0	0	-6	-8	10	10	1089 N.M.I.
10000	1	1	0	0	0	-6	-8	-8	-6	-5	0	-1	-3	-10	-12	11	11	7 9
18000	0	4	1	1	1	-7	-9	-9	-16	-13	-3	-7	-9	-20	-22	16	15	8 10
CHICAGO 5000	-11	-6	-4	-8	-8	-14	-15	-15	10	6	4	7	6	0	0	9	9	1368 N.M.I.
10000	-22	-12	-12	-15	-16	-23	-24	-24	21	11	11	15	14	7	5	10	10	7 9
18000	-35	-23	-22	-28	-27	-37	-40	-40	31	20	21	25	23	14	11	16	15	8 10
CHICAGO 5000	-7	-5	-4	-4	-5	-13	-15	-15	5	3	3	3	3	-4	-6	14	13	469 N.M.I.
10000	-15	-9	-5	-7	-9	-19	-21	-21	9	6	4	4	5	-3	-5	14	15	9 11
18000	-24	-17	-7	-13	-16	-30	-34	-34	12	7	4	4	6	-5	-8	21	21	11 14
CHICAGO 5000	12	8	6	7	7	0	-2	-2	-13	-9	-5	-8	-9	-18	-20	15	14	265 N.M.I.
10000	23	15	12	11	15	6	2	2	-25	-18	-12	-13	-17	-28	-31	16	16	10 12
18000	35	24	17	22	23	10	6	6	-44	-29	-19	-28	-29	-45	-49	23	23	12 15
CHICAGO 5000	13	7	9	10	9	2	0	0	-14	-8	-2	-11	-11	-16	-20	15	12	904 N.M.I.
10000	23	13	17	17	16	7	5	5	-26	-15	-10	-13	-19	-28	-30	14	14	9 10
18000	37	21	11	25	25	13	10	10	-42	-26	-24	-31	-30	-43	-47	20	19	13 12

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION			
	DIRECT					RETURN					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85
CHICAGO														
5000	-7	-6	-5	-5	-6	-12	-13	6	6	6	4	5	0	-1
10000	-18	-13	-8	-11	-13	-20	-22	15	12	8	10	11	4	2
18000	-35	-26	-16	-21	-24	-35	-38	28	22	15	17	19	10	7
CHICAGO														
5000	14	10	8	9	9	2	0	-16	-11	-8	-9	-11	-19	-21
10000	28	19	15	14	18	9	6	-30	-21	-15	-15	-20	-30	-33
18000	44	29	21	26	28	15	12	-49	-33	-22	-31	-32	-48	-52
CHICAGO														
5000	-5	-3	-2	-2	-3	-11	-13	2	1	2	1	1	-6	-8
10000	-10	-6	-3	-4	-6	-15	-18	4	2	2	2	2	-6	-8
18000	-22	-11	-4	-8	-10	-24	-28	2	0	1	0	0	-11	-14
CHICAGO														
5000	-7	-7	-4	-2	-5	-11	-12	6	6	4	1	4	-1	-2
10000	-11	-8	-3	-4	-7	-13	-15	8	6	3	3	4	0	-2
18000	-23	-15	-1	-9	-11	-22	-25	13	8	0	4	5	-2	-4
CHICAGO														
5000	-12	-8	-6	-9	-9	-18	-20	11	7	5	8	7	-1	-3
10000	-22	-14	-13	-15	-16	-26	-29	20	12	12	14	14	4	2
18000	-38	-25	-21	-27	-27	-42	-46	30	20	19	22	22	8	5
CHICAGO														
5000	-12	-7	-5	-10	-9	-17	-19	11	6	5	9	7	0	-2
10000	-22	-13	-13	-16	-16	-25	-28	20	12	13	15	14	6	4
18000	-35	-23	-22	-27	-27	-39	-43	30	19	20	23	22	10	7
CHICAGO														
5000	-6	-5	-4	-4	-5	-11	-12	5	5	4	4	4	0	-2
10000	-17	-11	-9	-11	-12	-19	-21	16	10	9	11	11	4	3
18000	-34	-25	-18	-23	-25	-36	-39	29	21	17	19	20	11	8
CHICAGO														
5000	14	10	8	9	9	2	0	-15	-11	-8	-9	-11	-19	-21
10000	28	19	15	13	18	8	6	-30	-21	-15	-15	-20	-31	-33
18000	44	28	21	26	28	15	11	-49	-32	-22	-31	-32	-48	-52
CHICAGO														
5000	-5	-3	-2	-1	-3	-10	-12	2	1	2	0	1	-5	-7
10000	-9	-5	-2	-3	-5	-13	-15	2	1	2	0	1	-6	-8
18000	-19	-9	0	-4	-8	-20	-24	1	-1	-1	-1	-1	-11	-14

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

+PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*										STANDARD DEVIATION			
	DIRECT					RETURN					JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85
CHICAGO	TO NIAGARA FALLS													
5000	14	8	10	9	1	0		-15	-9	-8	-10	-11	-19	-22
10000	26	17	15	16	8	6		-28	-18	-15	-17	-20	-30	-32
18000	41	25	21	27	13	10		-46	-29	-23	-31	-31	-47	-51
CHICAGO	TO OXNAPE AFB													
5000	-6	-5	-4	-3	-5	-11		5	5	4	2	3	0	-2
10000	-16	-11	-9	-10	-12	-20		14	10	8	10	10	4	2
18000	-33	-25	-17	-21	-23	-37		27	21	16	17	19	10	8
CHICAGO	TO PATRICK AFB													
5000	1	2	1	2	1	-5	-6	-3	-3	-1	-2	-3	-9	-11
10000	5	4	2	2	3	-4	-5	-11	-8	-3	-3	-6	-14	-16
18000	5	8	4	4	5	-4	-7	-22	-17	-5	-11	-13	-25	-28
CHICAGO	TO PITTSBURGH													
5000	14	9	7	9	0	-1		-15	-10	-7	-9	-10	-19	-22
10000	27	18	14	14	17	8	5	-29	-20	-14	-15	-19	-30	-33
18000	43	27	20	26	27	14	10	-48	-31	-21	-30	-31	-47	-52
CHICAGO	TO REGINA													
5000	-11	-6	-5	-9	-8	-18		10	5	5	8	6	0	-2
10000	-21	-12	-13	-6	-16	-26		20	11	12	14	14	6	4
18000	-34	-22	-21	-27	-26	-40		28	18	18	23	21	10	7
CHICAGO	TO SCOTT AFB													
5000	-7	-4	-3	-4	-5	-13	-16	4	2	3	3	3	-5	-7
10000	-14	-9	-5	-7	-9	-19	-22	8	5	4	5	5	-4	-6
18000	-27	-16	-9	-13	-16	-30	-34	9	6	6	3	6	-7	-10
CHICAGO	TO SELFREDGE AFB													
5000	14	8	8	10	9	1	-1	-15	-9	-8	-10	-11	-20	-22
10000	26	16	14	15	17	7	4	-27	-18	-15	-16	-19	-30	-32
18000	41	25	21	26	27	13	9	-46	-29	-22	-30	-31	-47	-51
CHICAGO	TO SHAW AFB													
5000	7	6	4	4	5	-2	-4	-9	-7	-4	-4	-6	-14	-16
10000	13	10	6	5	8	0	-2	-19	-14	-7	-7	-12	-21	-24
18000	16	15	8	11	11	0	-2	-33	-24	-11	-18	-20	-35	-38
CHICAGO	TO WESTOVER AFB													
5000	15	9	8	10	10	2	0	-16	-10	-8	-10	-11	-19	-21
10000	28	18	15	14	18	9	7	-30	-20	-16	-17	-21	-30	-33
18000	43	27	22	29	28	16	13	-48	-31	-23	-32	-33	-48	-52

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION				
	DIRECT						RETURN										
	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT	
CHICAGO 5000	10	4	6	8	6	-2	-4	-12	-5	-6	-9	-8	-17	15	14	11	13
10000	18	11	10	12	12	2	0	-22	-13	-12	-14	-15	-26	16	16	12	15
18000	27	16	15	18	18	4	1	-37	-23	-18	-25	-25	-40	23	23	14	23
CHICAGO 5000	-11	-6	-4	-8	-8	-14	-15	10	6	7	7	6	0	9	9	7	9
10000	-21	-12	-11	-15	-15	-22	-24	20	11	11	14	13	7	10	10	8	9
18000	-35	-23	-22	-28	-27	-37	-40	31	20	21	25	23	14	16	15	10	15
CHICAGO 5000	-7	-3	-3	-9	-6	-12	-14	6	2	2	7	4	-2	10	9	8	10
10000	-16	-9	-11	-13	-13	-19	-20	14	8	10	12	11	4	9	9	8	9
18000	-26	-16	-16	-20	-20	-29	-31	20	13	13	16	15	6	14	13	10	13
CHITOSE AB 5000	-5	-5	-5	0	-4	-9	-10	4	5	5	0	3	-1	7	7	7	7
10000	-15	-13	-6	-9	-11	-17	-19	10	11	6	7	8	3	8	8	7	8
18000	-24	-18	-6	-13	-16	-25	-27	14	10	5	8	9	2	10	10	8	9
CHITOSE AB 5000	-7	-6	-5	-1	-5	-13	-12	6	6	5	1	4	0	7	7	7	7
10000	-19	-14	-6	-10	-13	-19	-21	15	12	6	8	10	4	8	8	8	8
18000	-35	-24	-9	-18	-21	-31	-34	23	17	8	13	14	7	11	10	8	10
CHITOSE AB 5000	-9	-6	-4	-7	-7	-14	-16	6	5	4	6	5	-1	11	11	9	11
10000	-20	-15	-7	-16	-15	-24	-26	12	11	6	13	10	2	13	13	10	12
18000	-31	-23	-10	-24	-22	-34	-38	13	13	8	15	12	1	18	17	13	16
CHITOSE AB 5000	0	-2	-4	-3	-3	-9	-10	-1	1	4	2	1	-4	10	9	8	9
10000	-3	-3	-3	-5	-4	-11	-13	-5	0	3	2	0	-7	11	11	9	10
18000	-12	-7	-4	-8	-8	-17	-20	-14	-7	1	-1	-5	-15	15	14	11	14
CHITOSE AB 5000	-6	-5	-4	-3	-5	-11	-12	4	5	4	2	3	-2	9	9	8	9
10000	-17	-15	-6	-12	-13	-20	-22	10	12	6	10	9	2	11	11	9	10
18000	-32	-21	-9	-18	-20	-31	-33	13	10	7	10	9	1	14	13	11	13
CHITOSE AB 5000	-13	-8	-4	-9	-9	-16	-18	11	7	4	9	7	0	10	11	9	11
10000	-25	-18	-7	-20	-18	-27	-30	21	16	7	18	15	6	12	13	10	12
18000	-17	-28	-12	-23	-26	-39	-42	27	22	10	23	20	8	18	16	13	16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUVALENT WIND SPEED IN KNOTS										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85
CHITOSE AB														
TO														
SCOD	-13	-8	-4	-8	-9	-15	-17	11	7	4	7	7	1	0
10000	-24	-10	-6	-10	-17	-25	-27	21	17	6	16	14	7	5
18000	-38	-28	-12	-28	-27	-38	-41	32	24	11	25	22	12	9
CHITOSE AB														
TO														
SCOD	-11	-7	-4	-8	-8	-15	-17	8	6	4	7	6	0	-2
10000	-23	-17	-7	-18	-16	-26	-28	17	14	7	16	13	4	2
18000	-35	-26	-11	-26	-24	-37	-40	21	17	9	19	16	5	2
CHITOSE AB														
TO														
SCOD	-12	-7	-4	-8	-7	-13	-15	9	6	4	4	5	0	-1
10000	-22	-14	-7	-15	-13	-23	-25	17	14	5	12	12	4	2
18000	-37	-26	-11	-24	-24	-35	-38	25	19	10	17	17	8	5
CHITOSE AB														
TO														
SCOD	6	7	6	11	7	0	-1	-8	-9	-6	-13	-9	-17	-19
10000	14	11	7	18	12	4	2	-17	-13	-8	-20	-15	-23	-25
18000	20	17	9	24	17	6	3	-27	-21	-11	-29	-22	-34	-37
CHITOSE AB														
TO														
SCOD	-7	-6	-5	-2	-6	-11	-12	5	4	5	1	4	-1	-2
10000	-19	-15	-6	-12	-13	-20	-22	13	13	6	10	10	4	2
18000	-35	-23	-9	-18	-21	-32	-34	20	15	8	12	13	5	3
CHITOSE AB														
TO														
SCOD	-2	-3	-3	-4	-4	-11	-13	0	2	3	3	1	-5	-7
10000	-8	-6	-4	-10	-7	-16	-19	-2	1	3	5	1	-7	-9
18000	-12	-10	-4	-13	-10	-23	-26	-10	-3	1	0	-3	-15	-19
CHITOSE AB														
TO														
SCOD	5	0	-2	0	0	-5	-7	-8	-1	1	0	-2	-8	-10
10000	15	6	0	2	5	-1	-7	-20	-10	-1	-5	-9	-17	-19
18000	22	19	3	9	12	3	1	-40	-27	-6	-17	-22	-35	-38
CHITOSE AB														
TO														
SCOD	0	-1	-3	0	-2	-7	-9	1	0	2	-1	0	-6	-7
10000	0	0	0	0	0	-6	-7	-3	-1	0	-3	-2	-8	-9
18000	-5	-3	-1	0	-3	-10	-12	-8	-4	-2	-6	-5	-13	-15
CHITOSE AB														
TO														
SCOD	4	4	4	4	4	-1	-3	-7	-5	-4	-6	-6	-13	-14
10000	11	7	10	8	9	2	0	-15	-9	-11	-11	-12	-19	-21
18000	13	12	14	11	12	3	0	-25	-17	-17	-10	-20	-29	-32

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

EQUIVALENTS ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN KNOTS		EQUIVALENT HEADWIND IN KNOTS														STANDARD DEVIATION			
		DIRECT							RETURN										
		JAN	APR	JUL	OCT	00350	A75	A85	JAN	APR	JUL	OCT	00350	A75	A85				
CHURCHILL																			
SCOO	-8	-2	-4	-10	-6	-14	-16	7	2	3	8	4	-2	-4	12	10	10	12	717 N.M.I.
10000	-9	-4	-8	-10	-9	-16	-17	7	5	7	8	6	0	-1	10	10	10	12	
18000	-16	-13	-13	-17	-15	-25	-28	11	11	11	12	11	1	-1	16	15	13	16	
CHURCHILL																			
SCOO	1	1	0	1	0	-5	-6	-3	-2	-1	-3	-3	-9	-10	10	9	7	9	1724 N.M.I.
10000	3	2	3	3	2	-3	-4	-8	-5	-4	-6	-6	-12	-14	9	10	8	9	
18000	1	3	5	4	3	-5	-7	-14	-11	-9	-11	-12	-21	-23	14	14	9	14	
CHURCHILL																			
SCOO	-3	-2	0	-9	-4	-10	-11	2	2	0	8	2	-3	-4	8	8	8	9	1500 N.M.I.
10000	-9	-6	-8	-9	-9	-14	-15	9	6	5	8	7	2	1	9	8	7	7	
18000	-18	-13	-13	-16	-15	-23	-25	16	11	12	15	13	6	4	12	11	9	11	
CHURCHILL																			
SCOO	0	0	-2	0	-1	-7	-8	-1	0	1	-1	0	-6	-8	9	9	7	9	1750 N.M.I.
10000	0	0	0	1	0	-5	-7	-5	-2	-1	-4	-3	-10	-11	9	9	8	9	
18000	-3	-1	0	0	-1	-9	-11	-9	-6	-3	-7	-6	-15	-17	14	13	9	13	
CHURCHILL																			
SCOO	-1	0	-2	-2	-2	-9	-11	0	0	2	0	0	-7	-9	11	11	10	12	899 N.M.I.
10000	0	0	-2	0	-1	-8	-10	-2	-1	0	-1	-1	-8	-10	10	11	10	11	
18000	-4	-3	-7	-4	-5	-15	-17	-5	-1	2	-2	-1	-12	-14	16	15	12	16	
CHURCHILL																			
SCOO	-3	-2	-1	-9	-4	-10	-11	2	2	1	8	3	-2	-3	8	8	7	9	1627 N.M.I.
10000	-9	-6	-8	-9	-9	-14	-15	9	5	7	9	7	2	0	9	8	7	8	
18000	-19	-13	-12	-17	-15	-23	-25	15	11	11	15	12	5	3	13	11	10	11	
CHURCHILL																			
SCOO	-5	-2	-3	-3	-4	-9	-10	4	2	3	2	2	-2	-3	6	7	6	8	1777 N.M.I.
10000	-4	-2	-5	-4	-4	-10	-11	1	1	4	2	2	-3	-4	8	8	7	8	
18000	-11	-9	-12	-9	-11	-19	-21	1	4	9	3	4	-3	-6	14	13	9	12	
CHURCHILL																			
SCOO	0	0	-1	1	0	-6	-7	-2	-1	0	-2	-1	-8	-9	10	9	8	9	1647 N.M.I.
10000	1	1	1	2	1	-4	-6	-6	-3	-2	-4	-5	-11	-12	9	10	9	9	
18000	-1	0	2	2	0	-7	-10	-12	-8	-6	-9	-9	-18	-20	14	14	9	14	
CHURCHILL																			
SCOO	2	2	1	2	1	-4	-5	-4	-3	-1	-3	-3	-9	-11	10	9	8	9	1616 N.M.I.
10000	5	3	4	4	4	-2	-4	-10	-6	-6	-6	-7	-14	-16	10	10	8	10	
18000	3	5	6	5	4	-3	-6	-18	-12	-10	-13	-13	-22	-25	15	14	9	14	

WINDS--COMPUTED FOR A 120-KT AIRSPEED.
 00350--ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIG. DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT MEAN WIND SPEED												STANDARD DEVIATION				
	DIRECT						RETURN						JAN	APR	JUL	OCT	
	JAN	APR	JUL	OCT	00450	A75	APR5	JAN	APR	JUL	OCT	00450	A75	A85			
CHLSEWILL	FORT BLISS																1692 N.M.I.
5000	-1	-2	-4	-3	-3	-3	-10	0	1	4	2	1	-3	-4	8	7	8
10000	-1	-1	-3	-1	-2	-8	-9	-1	0	2	0	0	-6	-7	9	7	9
18000	-7	-6	-7	-4	-7	-15	-17	-3	0	3	-2	0	-9	-11	14	13	9
CHLSEWILL	FORT BRAGG/PIPER																1538 N.M.I.
5000	4	3	3	3	3	-3	-4	-6	-4	-3	-5	-5	-11	-13	10	10	8
10000	9	6	7	6	7	0	-1	-14	-8	-9	-8	-10	-17	-18	10	10	8
18000	9	9	10	7	8	0	-2	-23	-16	-14	-15	-17	-27	-29	15	14	10
CHLSEWILL	FORT CAMPBELL																1350 N.M.I.
5000	2	2	0	2	1	-5	-6	-4	-3	-1	-4	-3	-10	-12	11	10	8
10000	5	3	4	4	4	-2	-4	-10	-6	-6	-7	-9	-15	-16	10	11	9
18000	4	5	6	5	5	-4	-6	-17	-11	-11	-13	-13	-23	-25	16	15	10
CHLSEWILL	FORT CARSON																1273 N.M.I.
5000	0	-1	-3	-2	-2	-9	-10	0	0	3	1	0	-5	-7	10	10	8
10000	0	0	-3	0	-1	-8	-9	-2	-1	1	-1	-1	-7	-9	10	10	8
18000	-5	-4	-7	-4	-6	-15	-17	-4	0	3	-2	-1	-10	-13	15	14	11
CHLSEWILL	FORT FUSTIS																1409 N.M.I.
5000	4	3	4	4	4	-2	-4	-7	-5	-4	-6	-6	-12	-14	10	10	8
10000	10	7	9	8	8	1	0	-15	-9	-11	-10	-12	-19	-21	11	11	9
18000	12	11	13	10	11	2	0	-25	-17	-17	-17	-19	-29	-32	16	15	11
CHLSEWILL	FORT MOOD																1663 N.M.I.
5000	0	0	-3	0	-1	-7	-9	-1	0	2	-1	0	-6	-8	9	9	8
10000	0	0	0	1	0	-5	-7	-4	-2	0	-3	-3	-9	-10	9	9	8
18000	-3	-2	-1	0	-2	-10	-12	-9	-4	-2	-7	-6	-14	-16	14	13	9
CHLSEWILL	FORT HUACHUCA																1759 N.M.I.
5000	-2	-2	-3	-3	-3	-8	-9	1	2	3	2	2	-2	-4	8	7	6
10000	-2	-2	-4	-2	-3	-8	-10	0	0	3	0	0	-4	-6	8	8	7
18000	-8	-7	-10	-6	-8	-16	-18	-1	1	6	0	1	-6	-8	14	12	9
CHLSEWILL	FORT KACH																1290 N.M.I.
5000	2	2	1	2	1	-5	-6	-4	-3	-2	-4	-4	-11	-12	11	10	9
10000	7	4	4	5	4	-1	-3	-11	-5	-7	-8	-8	-16	-17	11	11	9
18000	7	6	9	6	6	-2	-5	-19	-13	-12	-14	-15	-25	-27	16	15	11
CHLSEWILL	FORT LEAVENWORTH																1163 N.M.I.
5000	1	1	0	1	0	-6	-8	-3	-2	0	-2	-2	-9	-11	11	11	9
10000	3	2	1	3	2	-4	-6	-7	-4	-3	-5	-5	-12	-14	10	11	9
18000	1	1	0	1	0	-8	-11	-12	-7	-5	-9	-8	-18	-21	16	15	11

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

004--DEFINES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85
CHURCHILL	TO MCGUIRE AFB										1345 N.M.I.			
5000	5	4	4	5	4	-2	-3	-8	-5	-5	-6	-6	-13	-15
10000	12	7	10	9	9	2	0	-15	-9	-12	-11	-12	-19	-21
18000	14	12	15	12	13	3	1	-25	-17	-18	-19	-20	-30	-32
CHURCHILL	TO MEMPHIS										1431 N.M.I.			
5000	1	1	0	1	0	-5	-7	-3	-2	0	-3	-2	-9	-11
10000	3	2	2	3	2	-4	-5	-8	-5	-4	-6	-6	-13	-15
18000	1	2	4	4	2	-6	-8	-15	-10	-8	-12	-11	-21	-23
CHURCHILL	TO MINN-ST PAUL										833 N.M.I.			
5000	1	1	0	1	0	-7	-9	-3	-2	0	-3	-2	-10	-12
10000	4	3	3	4	4	-3	-5	-9	-5	-5	-7	-7	-15	-16
18000	5	4	4	4	4	-5	-8	-14	-9	-9	-11	-11	-21	-24
CHURCHILL	TO MINOT AFB										679 N.M.I.			
5000	-1	0	-2	-2	-2	-13	-12	0	0	2	0	0	-7	-9
10000	0	0	-2	0	-1	-9	-10	-2	-1	0	-2	-2	-9	-11
18000	-3	-2	-6	-3	-4	-14	-17	-5	-1	1	-2	-2	-12	-15
CHURCHILL	TO NELLIS AFB										1580 N.M.I.			
5000	-5	-2	-3	-4	-4	-9	-11	4	2	3	3	3	-2	-3
10000	-4	-2	-5	-4	-4	-10	-11	1	1	4	2	2	-3	-4
18000	-10	-8	-12	-9	-10	-19	-21	0	3	9	3	4	-4	-7
CHURCHILL	TO NEW CUMBERLAND										1290 N.M.I.			
5000	5	3	4	4	4	-2	-4	-7	-4	-5	-6	-6	-13	-14
10000	11	7	10	8	9	2	0	-15	-9	-11	-11	-12	-19	-21
18000	14	11	14	11	12	2	0	-24	-17	-18	-18	-20	-29	-32
CHURCHILL	TO NEW ORLEANS										1732 N.M.I.			
5000	0	0	0	1	0	-5	-7	-2	-1	0	-2	-2	-7	-9
10000	2	1	1	2	1	-4	-6	-7	-4	-3	-5	-5	-11	-13
18000	-1	1	4	2	1	-6	-9	-13	-9	-7	-10	-10	-18	-21
CHURCHILL	TO NIAGARA FALLS										1094 N.M.I.			
5000	5	3	4	5	4	-2	-4	-7	-4	-5	-6	-6	-13	-15
10000	11	7	10	9	9	1	0	-14	-9	-12	-12	-12	-20	-22
18000	15	11	15	12	13	3	0	-24	-16	-18	-19	-20	-30	-33
CHURCHILL	TO CUNARD AFB										1774 N.M.I.			
5000	-5	-2	-2	-3	-3	-6	-10	5	2	2	3	2	-2	-3
10000	-5	-3	-5	-4	-5	-10	-11	2	1	5	3	2	-2	-3
18000	-11	-10	-12	-10	-11	-19	-21	2	4	9	4	5	-3	-5

* HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

+ MINUS SIGN DENOTES TAILWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN PFEET	EQUJVALENT HEADWINDS*												STANDARD DEVIATION							
	DIRECT				RETURN															
	JAN	APR	JUL	OCT	00	A50	A75	A85	JAN	APR	JUL	OCT	00	A50	A75	A85	JAN	APR	JUL	OCT
CHLECHILL																				
5000	2	2	1	2	1	2	1	-3	-5	-4	-3	-2	-3	-3	-9	-10	9	9	7	8
10000	5	4	4	4	4	4	4	-1	-2	-10	-6	-6	-6	-7	-13	-15	9	9	7	9
18000	5	6	7	5	5	5	5	-2	-4	-19	-14	-13	-12	-14	-22	-25	13	13	9	13
CHLECHILL																				
5000	4	3	3	4	3	3	3	-3	-5	-6	-4	-4	-6	-5	-13	-14	11	11	9	11
10000	10	4	9	8	8	8	8	1	0	-14	-8	-10	-10	-11	-18	-20	11	11	9	11
18000	12	10	13	10	11	11	11	-1	-1	-23	-16	-16	-17	-18	-28	-31	16	16	11	16
CHLECHILL																				
5000	-2	0	0	-5	-2	-3	-10	-3	-10	1	0	0	4	0	-5	-6	9	8	8	10
10000	-9	-6	-4	-9	-4	-14	-15	-14	-15	8	5	9	9	7	2	1	8	8	7	7
18000	-17	-12	-14	-15	-15	-22	-24	-22	-24	15	11	13	14	13	6	4	12	11	9	10
CHLECHILL																				
5000	-4	-1	-3	-5	-4	-12	-14	-12	-14	2	0	3	3	2	-6	-7	12	11	11	13
10000	-3	-2	-4	-3	-4	-11	-13	-11	-13	0	0	2	1	0	-6	-8	11	11	10	11
18000	-7	-7	-9	-8	-8	-18	-21	-18	-21	0	3	5	2	2	-7	-10	16	15	13	16
CHLECHILL																				
5000	2	1	0	1	0	0	-7	-5	-7	-3	-2	-1	-3	-3	-10	-11	11	10	9	11
10000	5	3	3	4	3	3	-5	-3	-5	-9	-5	-5	-7	-7	-14	-16	11	11	10	11
18000	4	3	5	5	4	4	-7	-5	-7	-16	-10	-10	-13	-13	-22	-25	16	15	11	15
CHLECHILL																				
5000	4	3	2	4	3	-3	-5	-3	-5	-6	-4	-3	-6	-5	-12	-14	11	11	9	11
10000	10	6	8	8	8	0	-1	0	-1	-13	-8	-10	-10	-11	-18	-20	11	12	10	11
18000	12	10	12	10	11	0	-1	0	-1	-22	-15	-16	-17	-18	-28	-31	17	16	12	16
CHLECHILL																				
5000	3	3	2	3	2	-3	-4	-3	-4	-5	-4	-3	-4	-4	-11	-12	10	9	8	9
10000	8	5	6	5	6	0	-2	0	-2	-13	-8	-8	-8	-10	-16	-18	10	10	8	10
18000	7	8	9	5	7	-1	-3	-1	-3	-21	-15	-13	-14	-16	-25	-28	15	14	10	14
CHLECHILL																				
5000	-1	1	2	3	0	-5	-6	-5	-6	1	-1	-3	-4	-2	-8	-10	8	9	9	9
10000	-3	1	0	0	-1	-7	-8	-7	-8	2	-2	0	-1	-1	-7	-8	9	9	9	9
18000	0	0	0	0	0	-8	-11	-8	-11	-3	-3	-1	-3	-3	-12	-14	13	13	12	13
CHLECHILL																				
5000	7	4	5	6	5	-1	-3	-1	-3	-9	-5	-6	-7	-7	-14	-16	11	10	9	10
10000	13	8	11	11	10	3	1	3	1	-16	-9	-13	-13	-13	-21	-22	11	11	9	11
18000	14	12	16	14	14	5	2	5	2	-25	-17	-20	-20	-21	-31	-33	16	15	11	15

•MEADWINNS--COMPUTEN FNP A 120-KT AIRSPEED.

***A-DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 -MINUS SIGN DENOTES -HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

STATION IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00450	075	085	JAN	APR	JUL	OCT	00450	075	085		
CHURCHILL																
5000	4	3	3	4	3	-4	-6	-6	-4	-4	-6	-5	-13	-15	12	943 N.MI.
10000	11	6	9	8	8	1	0	-13	-8	-11	-11	-11	-19	-21	11	10 12
18000	13	10	13	11	11	1	-1	-21	-14	-17	-17	-18	-28	-31	17	12 10 11
CHURCHILL																
5000	-9	-3	-3	-7	-6	-12	-14	8	3	3	6	4	-1	-3	10	1196 N.MI.
10000	-10	-4	-7	-10	-9	-15	-16	7	5	6	8	6	0	-1	10	8 10
18000	-16	-13	-13	-16	-15	-24	-27	9	9	11	11	10	0	-1	15	9 8 9
CHURCHILL																
5000	-5	-2	-3	-11	-5	-13	-16	5	2	3	10	4	-2	-4	11	637 N.MI.
10000	-12	-7	-11	-12	-11	-14	-20	11	7	10	12	10	3	1	10	11 10 13
18000	-20	-15	-16	-14	-14	-27	-30	14	14	15	18	15	6	4	15	10 10 10
CLARK AFB																
5000	2	5	-4	7	2	-2	-4	-2	-4	4	-6	-3	-8	-9	6	715 N.MI.
10000	0	0	-4	0	-1	-6	-7	0	0	4	0	0	-4	-5	8	5 8 8
18000	-5	-4	3	2	-1	-7	-9	5	4	-3	-2	0	-5	-7	9	9 9 7
CLARK AFB																
5000	2	0	-3	-4	-2	-5	-6	-3	0	4	4	1	-2	-3	5	1770 N.MI.
10000	-2	-1	-2	-3	-3	-6	-7	2	1	2	3	2	-1	-2	5	4 4 5
18000	-2	-1	-3	-2	-3	-6	-7	2	1	3	2	2	-1	-2	6	5 6 6
CLARK AFB																
5000	-3	-2	-1	-5	-3	-7	-9	2	3	2	5	2	-1	-2	6	570 N.MI.
10000	-5	-2	-3	-4	-4	-9	-10	5	3	3	4	3	-1	-2	8	5 6 9
18000	-3	-3	-4	-4	-4	-9	-11	3	3	4	5	3	-1	-2	8	5 9 7
CLARK AFB																
5000	5	1	-4	-3	0	-5	-6	-5	-1	5	3	0	-4	-5	5	1517 N.MI.
10000	5	1	-3	-2	0	-4	-5	-5	-1	3	2	0	-5	-6	5	4 4 6
18000	5	1	2	3	1	-2	-3	0	-1	-2	-2	-2	-6	-7	5	5 6 6
CLARK AFB																
5000	2	2	-1	6	2	-2	-4	-2	-2	0	-6	-3	-8	-9	6	908 N.MI.
10000	-2	-2	-3	-1	-3	-8	-9	1	2	3	1	1	-3	-4	8	6 8 7
18000	-12	-9	3	0	-4	-12	-14	11	8	-3	0	3	-3	-5	9	6 9 8
CLARK AFB																
5000	5	5	3	3	4	-1	-2	-4	-5	-3	-3	-4	-9	-11	7	560 N.MI.
10000	2	3	0	1	1	-4	-5	-3	-3	-1	-1	-3	-8	-10	9	6 9 8
18000	-9	-5	3	1	-2	-9	-11	5	4	-3	-1	0	-6	-7	10	7 10 9

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 ***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	JCT	00A50	A75	A85	JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT
CLARK AFB																		
SCCO	3	5	5	5	2	2	-4	-4	-5	-5	2	-3	-9	-10	7	7	8	7
10000	11	5	4	4	7	1	0	-12	-12	-6	-5	-9	-15	-17	9	8	9	8
18000	14	9	4	5	7	1	0	-26	-15	-5	-7	-13	-22	-25	10	10	8	9
CLARK AFB																		
SCCO	4	3	2	-1	1	-3	-5	-5	-3	-2	4	-2	-7	-9	7	6	8	7
10000	7	2	1	2	2	-2	-4	-9	-1	-3	-2	-4	-10	-11	8	6	8	8
18000	20	13	0	4	8	1	0	-23	-15	-1	-4	-11	-20	-22	9	8	8	8
CLARK AFB																		
SCCO	4	5	5	-1	2	-3	-4	-4	-2	-5	3	-3	-9	-11	6	7	9	8
10000	9	4	5	3	6	0	-1	-10	-9	-6	-3	-8	-14	-15	9	7	10	9
18000	14	10	2	4	7	0	-1	-19	-13	-2	-4	-10	-18	-20	10	10	9	9
CLARK AFB																		
SCCO	2	4	5	-3	1	-3	-5	-2	-4	-5	3	-2	-8	-9	7	7	8	7
10000	2	6	4	1	3	-2	-3	-7	-8	-4	-2	-6	-12	-13	8	7	9	8
18000	2	1	4	1	2	-4	-5	-15	-8	-4	-3	-8	-15	-17	10	10	8	9
CLARK AFB																		
SCCO	1	0	-2	5	0	-3	-4	-1	0	2	-5	-1	-5	-6	5	5	7	6
10000	-5	-5	-5	-1	-5	-9	-10	4	4	5	1	3	-1	-2	7	5	8	6
18000	-14	-11	3	-1	-6	-14	-16	14	10	-3	1	4	-2	-4	9	8	7	7
CLARK AFB																		
SCCO	1	1	-10	1	-1	-4	-8	-1	-1	11	-1	0	-4	-5	5	4	5	6
10000	2	0	-6	-2	-1	-6	-7	-1	0	6	2	1	-2	-3	6	4	7	6
18000	0	1	4	5	2	-2	-3	0	-1	-4	-5	-3	-8	-9	7	6	7	6
CLARK AFB																		
SCCO	5	5	5	0	3	-1	-2	-6	-2	-5	0	-5	-10	-11	7	7	7	7
10000	11	11	6	7	8	3	1	-15	-13	-6	-9	-12	-18	-19	8	8	8	8
18000	17	12	6	9	10	4	2	-30	-20	-7	-13	-17	-27	-29	10	10	8	9
CLARK AFB																		
SCCO	1	2	-10	2	0	-6	-8	-1	-1	11	-2	0	-4	-5	5	4	5	7
10000	1	0	-6	-2	-1	-6	-7	-1	0	5	2	1	-2	-3	6	4	7	6
18000	0	1	4	5	2	-2	-3	0	-1	-4	-5	-3	-8	-9	7	6	7	6
CLARK AFB																		
SCCO	0	1	3	-3	0	-5	-6	0	-2	-4	3	-1	-6	-7	6	7	7	6
10000	-5	-1	1	-4	-3	-8	-9	1	0	-1	3	0	-5	-6	8	7	8	8
18000	-13	-9	2	-5	-6	-14	-15	0	2	-3	2	0	-6	-7	10	9	9	8

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN FEET		EQUIVALENT HEADWINDS IN D.S.												STANDARD DEVIATION				
		PERCENT RETURN																
		JAN	APR	JUL	OCT	0050	075	055	JAN	APR	JUL	OCT	0050	075	055	JAN	APR	JUL
CLARK AFB	PUSAN EAST																	
5000	3	4	5	-3	2	-3	-4	-3	-5	-5	3	-3	-8	-10	7	7	8	7
10000	5	9	5	3	5	0	-1	-9	-11	-5	-3	-8	-14	-15	9	8	9	8
18000	8	5	4	3	4	-1	-2	-21	-12	-5	-5	-11	-19	-21	10	10	8	9
CLARK AFB	SAIGON																	
5000	0	4	-8	5	0	-5	-6	0	-3	8	-5	-1	-6	-7	5	5	6	8
10000	1	0	-6	0	-1	-6	-8	-1	0	6	0	0	-4	-5	7	5	8	8
18000	-2	0	3	3	0	-5	-6	2	0	-3	-3	-1	-7	-8	8	8	8	7
CLARK AFB	SHANGHAI																	
5000	3	5	5	-2	2	-2	-4	-3	-5	-5	2	-3	-8	-10	7	7	8	7
10000	2	5	4	1	3	-2	-4	-5	-6	-4	-1	-5	-10	-12	8	7	10	9
18000	0	-1	4	1	0	-6	-7	-9	-4	-4	-7	-5	-12	-14	10	10	9	9
CLARK AFB	SINGAPORE																	
5000	3	2	-7	-2	-1	-6	-7	-3	-2	8	1	0	-4	-5	5	4	4	7
10000	3	1	-5	-3	-1	-6	-7	-3	-1	5	3	0	-4	-5	6	5	7	7
18000	0	2	3	4	2	-2	-3	0	-1	-3	-4	-3	-7	-8	7	6	7	6
CLARK AFB	TAIPEI																	
5000	4	6	5	-1	3	-2	-4	-4	-6	-5	1	-4	-10	-11	8	7	9	8
10000	4	8	5	3	6	0	-1	-8	-8	-5	-3	-7	-13	-14	9	7	10	10
18000	3	3	2	3	2	-3	-5	-8	-5	-2	-3	-5	-12	-13	10	10	9	9
CLARK AFB	TOKYO																	
5000	4	5	5	-1	3	-2	-3	-5	-5	-5	1	-4	-9	-10	7	7	7	7
10000	12	10	6	6	8	2	1	-16	-12	-6	-7	-11	-17	-18	8	8	8	8
18000	22	15	5	9	12	4	3	-33	-22	-6	-12	-18	-28	-31	10	9	8	9
CLARK AFB	VANUATU																	
5000	-3	-2	-1	-2	-3	-6	-7	2	2	1	2	1	-1	-2	5	4	5	6
10000	-7	-4	-4	-6	-6	-9	-10	7	4	4	6	5	1	0	5	4	6	6
18000	-7	-4	-7	-5	-6	-10	-11	7	4	7	5	5	1	1	6	5	6	5
CLARK AFB	DA NANG																	
5000	-3	0	17	0	0	-3	-4	3	0	-17	0	-1	-10	-13	4	5	5	5
10000	0	0	10	0	1	-2	-3	0	0	-10	0	-1	-6	-8	5	4	6	5
18000	-3	-2	-3	-4	-4	-8	-9	3	2	3	4	3	-1	-2	7	6	6	5
CLARK AFB	DIEGO GARCIA																	
5000	6	3	-2	-3	0	-3	-4	-6	-2	1	3	-1	-5	-6	4	4	4	6
10000	3	9	-5	3	2	-3	-5	-3	-8	4	-2	-3	-8	-9	6	7	7	7
18000	4	1	2	4	2	-2	-3	-4	-1	-2	-4	-3	-8	-9	9	7	7	6

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

***SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
COLOMBO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	0	-2	5	0	0	-3	-3	0	2	-6	0	-1	-5	-6	4	4	4	5
10000	-4	1	3	1	0	-4	-5	5	-1	-4	-1	-1	-5	-6	5	5	6	5
18000	-7	-3	-4	-5	-5	-9	-10	7	3	4	5	4	0	0	7	6	6	5
COLOMBO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-2	2	14	0	1	-2	-3	2	-2	-15	0	-2	-9	-12	4	5	6	5
10000	1	0	9	0	1	-2	-3	-1	0	-10	0	-2	-7	-8	5	5	7	5
18000	-1	0	-2	0	-1	-6	-7	0	0	2	0	0	-4	-5	8	7	6	6
COLOMBO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-2	-4	-12	-1	-5	-10	-11	2	5	10	2	4	0	0	5	6	6	6
10000	0	2	-4	0	-1	-4	-7	0	-2	5	0	0	-4	-5	6	6	6	6
18000	-12	-3	2	-3	-4	-10	-12	9	1	-1	3	2	-3	-4	9	8	6	7
COLOMBO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-1	-3	-1	-1	-2	-6	-7	2	3	0	2	1	-2	-3	5	5	6	5
10000	0	2	-1	-1	0	-4	-5	0	-2	0	1	0	-4	-6	6	6	6	6
18000	-9	-3	0	-3	-4	-10	-11	4	0	0	3	1	-3	-5	9	9	6	7
COLOMBO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-2	2	13	2	2	-2	-3	2	-2	-13	-1	-3	-9	-11	5	6	6	6
10000	2	1	9	0	2	-2	-3	-2	-2	-9	0	-3	-8	-9	6	6	8	6
18000	-1	0	-2	1	-1	-6	-7	0	0	2	-1	0	-5	-6	9	8	7	7
COLOMBO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-6	-2	19	2	0	-6	-7	6	2	-18	-3	0	-12	-15	4	5	5	7
10000	-3	-2	11	2	0	-4	-5	4	2	-11	-1	0	-7	-9	5	6	7	6
18000	-7	-3	-4	-6	-5	-10	-12	7	3	4	7	5	0	-1	9	7	7	6
COLOMBO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-2	-3	0	-2	-2	-6	-7	2	3	-1	2	1	-2	-3	5	6	6	6
10000	0	2	0	-1	0	-4	-5	0	-3	0	1	-1	-5	-6	6	6	7	6
18000	-8	-1	0	-3	-3	-9	-11	3	0	0	3	1	-4	-5	10	9	7	7
COLOMBO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-6	-2	19	1	0	-6	-7	7	2	-19	-2	0	-12	-16	4	5	5	7
10000	-3	-2	11	1	0	-4	-5	3	2	-11	-1	-1	-7	-9	5	5	7	6
18000	-7	-3	-4	-7	-5	-11	-12	7	3	4	7	5	0	0	8	7	7	6
COLOMBO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-4	-1	18	-1	0	-5	-6	5	1	-18	1	0	-10	-14	4	5	5	6
10000	-2	-1	11	0	0	-3	-4	2	1	-11	0	0	-6	-8	5	4	6	5
18000	-5	-2	-4	-7	-5	-9	-11	5	3	4	8	5	0	0	8	6	6	5

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*														STANDARD DEVIATION			
	DIRECT							RETURN										
	JAN	APR	JUL	OCT	**50	A75	ARS	JAN	APR	JUL	OCT	**45	A75	ARS	JAN	APR	JUL	OCT
COLOMBO																		
5000	-4	-1	14	3	0	-4	-5	4	1	-15	-3	-1	-11	-13	4	5	4	6
10000	-2	0	10	3	1	-3	-4	2	1	-10	-2	-1	-7	-9	5	5	6	6
18000	-9	-3	-4	-6	-6	-10	-11	7	3	5	7	5	1	0	8	6	6	5
COLOMBO																		
5000	-2	-5	-12	0	-5	-10	-11	2	5	11	1	4	0	0	5	5	6	5
10000	-1	0	-5	0	-2	-6	-7	0	-1	5	0	0	-3	-4	5	6	6	5
18000	-16	-7	0	-4	-6	-13	-15	12	4	0	4	4	-1	-2	9	8	6	6
COOKTOWN																		
5000	-1	7	10	7	6	0	-1	1	-6	-10	-7	-6	-12	-13	9	7	7	6
10000	4	5	1	6	4	0	-1	-6	-5	-1	-6	-5	-10	-11	7	7	8	7
18000	7	-3	-8	0	-3	-9	-11	0	3	8	0	2	-4	-6	9	9	9	9
COOKTOWN																		
5000	-3	0	4	4	1	-2	-3	3	0	-4	-3	-2	-5	-6	5	4	4	5
10000	1	0	4	5	2	-1	-1	-1	0	-4	-5	-3	-6	-7	4	5	5	5
18000	4	2	3	3	3	0	-1	-4	-1	-3	-2	-3	-7	-8	6	5	6	5
COOKTOWN																		
5000	-3	-4	-3	0	-3	-6	-7	3	4	3	0	2	0	-1	5	5	4	3
10000	-4	-4	-2	-2	-4	-6	-7	4	5	2	2	3	0	0	4	4	4	4
18000	-4	-2	-3	-4	-4	-8	-8	3	2	2	3	2	-1	-2	6	5	6	5
COOKTOWN																		
5000	-3	-5	-4	-2	-4	-7	-8	3	5	5	2	3	0	0	5	5	4	3
10000	-4	-5	-3	-3	-4	-7	-8	5	6	3	3	4	1	0	4	4	4	4
18000	-5	-1	-3	-4	-4	-8	-9	4	1	3	4	3	0	-1	6	5	6	5
COOKTOWN																		
5000	0	-2	-3	-1	-2	-7	-8	0	1	2	1	1	-4	-5	7	7	8	8
10000	-1	-3	-4	-4	-3	-9	-11	0	2	2	2	1	-4	-5	6	8	9	9
18000	-4	-3	-5	-5	-5	-12	-14	1	0	-3	-2	-1	-9	-11	9	11	13	12
COOKTOWN																		
5000	-1	-5	0	-1	-2	-7	-8	1	5	0	1	1	-2	-4	8	6	7	6
10000	2	5	13	8	7	1	0	-2	-5	-13	-8	-8	-13	-15	8	7	7	7
18000	4	8	21	12	10	3	1	-4	-8	-22	-13	-12	-20	-22	9	9	10	10
COOKTOWN																		
5000	4	3	-2	-3	0	-4	-6	-5	-3	1	3	-1	-6	-7	6	6	7	7
10000	1	-4	-14	-12	-7	-14	-16	-2	3	12	11	5	-1	-2	7	7	8	8
18000	-10	-11	-25	-24	-17	-26	-28	9	10	21	19	14	7	5	8	9	11	10

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS										STANDARD DEVIATION			
	DIRECT					RETURN					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	••A50	A75	A85	JAN	APR	JUL	OCT	••A50	A75	A85
COOKTOWN														
5000	0	-1	-1	0	-1	-6	-7	0	1	1	0	0	-4	-5
10000	-6	-4	0	3	-2	-8	-9	6	4	-1	-2	1	-4	-6
18000	0	1	1	0	0	-6	-8	0	-1	-1	0	-1	-7	-9
COOKTOWN														
5000	-1	-1	-3	-1	-2	-6	-7	1	2	3	2	2	-1	-2
10000	2	5	13	6	6	1	0	-2	-5	-13	-6	-7	-12	-13
18000	3	6	14	6	6	1	0	-4	-6	-14	-6	-8	-13	-15
COOKTOWN														
5000	-2	0	2	3	0	-3	-4	3	0	-2	-3	-1	-5	-6
10000	-1	-2	3	4	0	-5	-6	3	3	-2	-3	0	-5	-6
18000	1	0	0	1	0	-4	-6	-1	1	0	0	0	-5	-7
COOKTOWN														
5000	11	8	5	4	6	0	0	-12	-9	-5	-5	-8	-14	-16
10000	21	16	6	7	11	4	2	-23	-17	-6	-8	-13	-22	-24
18000	34	24	4	17	18	6	4	-42	-29	-5	-21	-24	-38	-42
COOKTOWN														
5000	-2	0	2	-1	0	-6	-7	1	0	-3	1	-1	-6	-7
10000	-11	-6	-2	-7	-13	-14	-16	8	4	1	6	4	-1	-2
18000	-21	-13	-5	-15	-13	-23	-26	11	6	3	10	7	-1	-3
COOKTOWN														
5000	9	7	3	3	5	-1	-2	-9	-7	-3	-3	-6	-13	-14
10000	17	14	1	5	8	0	-1	-18	-14	-1	-6	-10	-19	-21
18000	33	26	-2	14	16	2	0	-35	-28	2	-15	-19	-34	-37
COOKTOWN														
5000	10	8	4	4	6	0	-2	-11	-9	-6	-4	-8	-15	-17
10000	15	11	1	5	7	0	-2	-15	-12	-1	-5	-8	-17	-19
18000	25	19	-1	9	11	-1	-3	-30	-22	1	-11	-14	-29	-33
COOKTOWN														
5000	-1	1	5	-1	0	-6	-7	0	-2	-5	0	-2	-8	-10
10000	-7	-3	0	-4	-3	-11	-12	3	1	-1	3	1	-5	-7
18000	-14	-10	-2	-10	-9	-20	-23	3	2	0	5	2	-6	-9
COOKTOWN														
5000	-1	0	2	2	0	-4	-5	0	0	-2	-2	-1	-6	-7
10000	-13	-10	0	-3	-6	-14	-16	12	9	0	3	5	-1	-3
18000	-30	-25	0	-12	-16	-30	-33	26	22	0	10	12	1	0

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIG. DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN POUNDS	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION					
	JAN	APR	JUL	OCT	00450	075	085	JAN	APR	JUL	OCT	00450	075	085	JAN	APR	JUL	OCT
CORPUS CHRISTI TO ENGLAND AFB																		
5000	10	6	3	6	0	0	-2	-11	-8	-6	-3	-7	-15	-17	12	12	8	11
10000	16	13	2	5	8	0	-1	-17	-13	-1	-5	-9	-18	-21	12	12	8	12
18000	27	20	-2	10	11	0	-3	-32	-24	2	-12	-15	-31	-35	18	17	10	16
CORPUS CHRISTI TO FORT RENNING																		
5000	10	8	4	3	5	0	-2	-11	-8	-4	-3	-7	-14	-16	11	11	7	10
10000	19	15	2	6	9	1	0	-19	-15	-2	-6	-10	-19	-22	11	11	8	11
18000	34	25	-1	14	16	2	0	-37	-28	1	-16	-20	-35	-39	16	16	9	15
CORPUS CHRISTI TO FORT ALISS																		
5000	11	8	5	0	0	-6	-4	0	0	-5	-1	-2	-9	-10	11	10	7	10
10000	17	13	3	-3	-5	-14	-16	11	8	-3	2	3	-4	-5	11	10	8	11
18000	30	24	2	-12	-15	-30	-33	24	20	-2	10	11	0	-3	18	15	9	15
CORPUS CHRISTI TO FORT BRAGG/PNPE																		
5000	11	8	4	4	6	0	-1	-12	-9	-4	-4	-7	-14	-16	10	10	7	9
10000	20	16	4	6	10	2	1	-21	-17	-4	-7	-12	-21	-23	11	11	7	10
18000	36	24	1	16	18	4	2	-39	-29	-2	-18	-22	-37	-40	15	15	8	14
CORPUS CHRISTI TO FORT CAMPBELL																		
5000	10	8	6	3	4	0	-2	-11	-8	-6	-4	-8	-15	-16	12	11	8	10
10000	17	12	4	6	9	1	0	-19	-14	-4	-7	-11	-20	-22	12	12	8	11
18000	27	14	0	11	11	0	-2	-35	-24	0	-14	-17	-33	-37	18	17	9	16
CORPUS CHRISTI TO FORT CARSON																		
5000	0	2	6	0	2	-4	-6	0	-3	-6	0	-3	-10	-11	11	11	7	9
10000	-9	-5	1	-3	-4	-11	-13	5	3	-1	2	1	-4	-6	11	10	8	10
18000	-21	-14	0	-11	-11	-24	-27	9	8	0	7	4	-4	-7	18	16	10	15
CORPUS CHRISTI TO FORT FUSTIS																		
5000	11	8	5	4	6	0	0	-12	-9	-5	-4	-8	-14	-16	10	10	7	9
10000	21	16	5	7	11	3	2	-23	-17	-5	-8	-13	-22	-24	11	11	7	10
18000	36	24	3	17	18	6	3	-41	-29	-4	-20	-23	-38	-41	15	15	8	14
CORPUS CHRISTI TO FORT MOOD																		
5000	5	6	9	2	5	-1	-3	-7	-6	-9	-2	-6	-14	-16	13	12	8	11
10000	3	3	4	1	2	-4	-6	-6	-4	-3	-2	-4	-12	-14	12	11	9	12
18000	-1	-2	2	-2	-1	-11	-14	-10	-5	-2	-1	-4	-15	-18	19	17	10	16
CORPUS CHRISTI TO FORT MUACHUCA																		
5000	-1	0	4	2	1	-5	-6	0	0	-4	-2	-2	-8	-9	16	9	6	9
10000	-13	-10	2	-2	-5	-14	-16	12	9	-2	2	4	-2	-4	11	9	7	10
18000	-31	-25	1	-12	-16	-30	-34	26	22	-1	11	12	0	-1	17	15	9	14

• HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.
 ••• DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN ON NOTES HEADWINDS.

SMFET 90

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN POUNDS	EQUIVALENT HEADINGS												STANDARD DEVIATION	
	DIRECT						RETURN							
	JAN	APR	JUL	SEPT	OCT	NOV	JAN	APR	JUL	SEPT	OCT	NOV		
CORPUS CHRISTI TO 5000 10000 18000	10 17 27	8 12 18	0 6 11	4 9 12	0 1 0	-1 0 -1	-11 -20 -36	-8 -14 -24	-5 -4 -1	-4 -7 -15	-7 -11 -18	-14 -20 -33	-16 -22 -37	835 N.M.I. 12 11 7 10 12 12 8 11 17 16 9 16
CORPUS CHRISTI TO 5000 10000 18000	4 4 2	5 4 1	7 3 2	1 1 0	-2 -4 -8	-4 -6 -11	-5 -9 -17	-6 -6 -11	-7 -3 -2	-1 -2 -4	-5 -5 -8	-12 -13 -19	-14 -15 -23	710 N.M.I. 12 12 8 10 12 12 9 11 18 17 10 16
CORPUS CHRISTI TO 5000 12000 18000	3 -12 -26	1 -7 -10	3 -1 -6	1 -5 -16	-2 -12 -27	-4 -14 -29	-1 10 18	-1 6 13	-3 1 4	-1 4 12	-2 4 10	-6 0 2	-7 -1 0	1661 N.M.I. 7 7 5 6 9 8 6 8 15 13 9 13
CORPUS CHRISTI TO 5000 10000 18000	-1 -12 -29	-1 -10 -24	2 0 -3	2 -6 -13	0 -6 -16	-5 -15 -32	1 11 24	1 9 20	-1 0 2	-2 4 11	0 5 12	-5 0 2	-6 -2 0	1350 N.M.I. 8 7 5 7 10 9 6 8 16 14 8 13
CORPUS CHRISTI TO 5000 10000 18000	7 18 33	7 14 26	3 1 -2	3 5 16	-1 0 2	-2 -1 0	-10 -18 -36	-8 -15 -28	-3 -1 2	-3 -6 -16	-6 -10 -19	-13 -19 -35	-15 -21 -38	654 N.M.I. 11 11 7 10 11 11 8 11 16 16 9 14
CORPUS CHRISTI TO 5000 12000 18000	3 0 -6	4 1 -5	8 3 3	4 0 -4	-3 -6 -2	-5 -8 -17	-4 -3 -6	-5 -3 -3	-3 -3 -3	-1 0 0	-5 -3 -3	-13 -10 -13	-15 -12 -16	421 N.M.I. 13 12 8 11 12 11 9 12 19 17 10 16
CORPUS CHRISTI TO 5000 10000 18000	4 1 -5	5 1 -4	9 4 3	5 1 -2	-2 -5 -13	-4 -7 -16	-5 -4 -7	-6 -3 -3	-8 -3 -3	-1 -1 0	-6 -3 -3	-13 -11 -14	-15 -13 -16	308 N.M.I. 13 12 8 11 12 11 9 12 19 17 10 16
CORPUS CHRISTI TO 5000 10000 18000	6 10 14	5 7 9	6 4 3	5 4 5	-1 -1 -2	-3 -2 -4	-8 -14 -27	-6 -10 -18	-6 -4 -4	-3 -6 -11	-6 -9 -14	-13 -16 -27	-15 -18 -30	1014 N.M.I. 11 11 8 9 11 11 9 11 17 16 9 16
CORPUS CHRISTI TO 5000 10000 18000	1 -10 -25	2 -6 -19	6 0 -3	2 -4 -14	3 -5 -14	-2 -12 -30	-1 8 16	-3 5 13	-5 0 1	-2 3 10	-3 3 8	-8 -2 0	-10 -4 -2	1081 N.M.I. 9 8 6 7 10 9 7 9 17 15 9 14

HEADINGS—COMPUTED FOR A 120-KT AIRSPEED.

000—DENOTES ANNUAL FOUR VALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT in pounds	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION			
	WIND SPEED						RETURN						JAN APR JUL OCT			
	JAN	APR	JUL	OCT	00ASO	075	085	JAN	APR	JUL	OCT	00ASO	075	085		
CORPUS CHRISTI																
5000	0	2	-1	0	0	-6	-7	0	-3	2	0	0	-6	-7	9	915 N.M.I.
10000	9	8	-2	3	4	-2	-4	-10	-8	2	-3	-5	-12	-14	9	6
18000	24	22	-3	9	12	0	-2	-26	-23	3	-10	-14	-26	-29	13	7 7 11
CORPUS CHRISTI																
5000	9	8	3	3	5	0	-2	-10	-8	-3	-3	-6	-13	-14	10	878 N.M.I.
10000	18	15	2	5	9	1	0	-19	-15	-2	-6	-10	-19	-21	11	7 7 10
18000	34	26	0	15	17	3	0	-37	-29	0	-17	-21	-36	-39	15	15 8 14
CORPUS CHRISTI																
5000	11	9	4	3	6	0	-1	-11	-9	-5	-4	-7	-14	-16	12	681 N.M.I.
10000	18	14	3	6	9	1	0	-20	-15	-3	-7	-11	-20	-23	12	11 7 10
18000	31	22	-1	12	14	0	-1	-36	-26	0	-15	-18	-34	-38	17	12 8 11
CORPUS CHRISTI																
5000	8	7	2	3	4	-1	-2	-8	-7	-2	-3	-5	-12	-13	10	835 N.M.I.
10000	17	13	1	4	8	3	-1	-17	-14	-1	-5	-9	-18	-20	11	10 7 9
18000	33	26	-1	14	17	2	0	-35	-28	1	-15	-19	-34	-37	15	11 7 10
CORPUS CHRISTI																
5000	-1	1	-3	-1	-2	-7	-8	0	-1	3	1	0	-5	-6	10	855 N.M.I.
10000	8	7	-3	2	2	-3	-5	-8	-7	3	-2	-3	-10	-12	9	9 6 8
18000	22	21	-4	8	11	0	-3	-24	-22	4	-9	-13	-25	-28	13	9 7 8
CORPUS CHRISTI																
5000	0	1	3	1	1	-3	-4	-1	-1	-3	-1	-2	-6	-8	7	1561 N.M.I.
10000	-12	-7	-1	-4	-6	-13	-14	10	5	0	4	4	-1	-2	9	7 5 7
18000	-25	-18	-6	-16	-16	-26	-29	17	12	3	12	10	1	0	15	8 7 8
CORPUS CHRISTI																
5000	9	7	7	3	6	0	-2	-10	-8	-7	-3	-7	-15	-16	12	506 N.M.I.
10000	13	10	3	4	7	0	-2	-15	-12	-3	-5	-9	-17	-20	12	8 10
18000	19	13	0	7	8	-2	-5	-29	-20	0	-10	-13	-28	-32	18	9 12 16
CORPUS CHRISTI																
5000	-10	8	5	4	6	3	-1	-11	-8	-5	-4	-7	-14	-16	11	1018 N.M.I.
10000	18	13	5	7	10	2	1	-21	-14	-5	-8	-12	-21	-23	11	11 7 9
18000	29	18	2	13	13	2	0	-37	-25	-3	-17	-19	-34	-38	17	11 8 11
CORPUS CHRISTI																
5000	10	7	6	6	7	1	0	-12	-8	-6	-7	-9	-14	-16	9	1798 N.M.I.
10000	19	13	8	10	12	5	4	-23	-15	-9	-11	-14	-22	-24	10	9 6 8
18000	31	18	8	18	17	7	5	-40	-25	-12	-24	-24	-37	-40	15	10 7 9

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

000--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

+ MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN FEET	EQUIVALENT HEADWIND IN D.S. STRECH										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT	00A50	A75	A85
CORPUS CHRISTI TO LUXE AFB														
5000	0	0	4	2	1	-3	-5	0	0	-4	-2	-2	-7	-8
10000	-13	-9	1	-3	-6	-13	-15	12	6	-1	2	4	-2	-3
18000	-30	-25	0	-12	-16	-30	-33	25	21	-1	11	12	0	-2
CORPUS CHRISTI TO MCQUIPPE AFB														
5000	12	0	5	5	7	1	0	-12	-9	-5	-5	-8	-14	-16
10000	21	16	6	8	11	4	2	-24	-17	-7	-9	-14	-23	-25
18000	35	23	5	17	18	6	4	-42	-29	-6	-21	-24	-38	-42
CORPUS CHRISTI TO MEMPHIS														
5000	10	8	4	3	5	0	-2	-11	-9	-6	-3	-7	-15	-17
10000	16	12	3	5	8	0	-1	-18	-13	-3	-6	-10	-19	-21
18000	25	17	-1	9	10	-1	-3	-33	-23	1	-13	-16	-31	-35
CORPUS CHRISTI TO MEMPHIS CITY														
5000	-7	-9	-5	0	-6	-12	-13	6	9	5	0	5	0	-2
10000	-6	-5	-2	-1	-4	-10	-11	6	5	2	1	3	-2	-3
18000	-13	-8	-1	-5	-6	-15	-17	9	5	1	4	4	-3	-4
CORPUS CHRISTI TO MINN-ST PAUL														
5000	2	3	5	0	2	-4	-6	-4	-4	-5	-1	-4	-11	-12
10000	2	2	2	0	1	-5	-7	-7	-5	-3	-2	-5	-12	-14
18000	0	0	1	-1	0	-9	-11	-15	-10	-3	-5	-8	-18	-21
CORPUS CHRISTI TO MINOT AFB														
5000	-2	0	3	-2	0	-7	-8	0	-1	-4	1	-1	-8	-9
10000	-4	-3	0	-4	-3	-10	-12	2	0	0	2	0	-5	-7
18000	-13	-8	-2	-9	-8	-18	-20	0	0	0	3	0	-8	-10
CORPUS CHRISTI TO MELLIS AFB														
5000	0	0	4	2	1	-3	-4	0	0	-3	-2	-2	-7	-8
10000	-12	-9	0	-4	-6	-13	-15	11	8	0	3	4	-1	-3
18000	-29	-23	-1	-13	-16	-29	-32	23	19	0	11	11	1	-1
CORPUS CHRISTI TO NEW CUMBERLAND														
5000	11	8	5	5	7	0	0	-12	-9	-5	-5	-8	-14	-16
10000	20	15	4	7	11	3	2	-23	-17	-6	-8	-13	-22	-24
18000	34	22	4	16	17	5	3	-41	-28	-6	-21	-23	-38	-41
CORPUS CHRISTI TO NEW ORLEANS														
5000	9	7	3	3	5	-1	-3	-9	-7	-3	-3	-6	-13	-15
10000	17	13	0	5	8	0	-1	-17	-13	0	-5	-9	-18	-20
18000	32	25	-3	13	15	0	-2	-34	-27	3	-14	-18	-33	-37

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00A50--FIFTIES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
+MINUS SIGN INDICATES HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN KNOTS	EQUVALENT HEADWIND										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	0050	A75	A85	JAN	APR	JUL	OCT	0050	A75	A85
CORPUS CHRISTI TO NIAGARA FALLS														
5000	10	7	5	5	6	0	-1	-11	-8	-5	-5	-7	-14	-16
10000	18	12	6	7	10	3	1	-21	-14	-7	-9	-13	-21	-23
15000	27	17	4	14	14	3	1	-30	-24	-7	-19	-21	-35	-38
CORPUS CHRISTI TO CRYSTAL AFB														
5000	-1	0	2	2	0	-4	-5	0	0	-2	-2	-1	-6	-7
10000	-13	-19	0	-3	-4	-14	-16	12	9	0	3	5	-1	-3
15000	-30	-25	-1	-12	-16	-33	-33	26	21	0	10	12	1	0
CORPUS CHRISTI TO PATRICK AFB														
5000	5	1	1	2	2	-2	-1	-4	-6	-1	-2	-4	-9	-11
10000	14	11	0	5	6	0	-1	-14	-12	0	-4	-7	-15	-17
15000	24	24	-1	12	15	2	0	-31	-26	1	-13	-17	-30	-34
CORPUS CHRISTI TO PITTSBURGH														
5000	10	9	5	4	6	0	-1	-12	-9	-5	-5	-8	-15	-16
10000	19	13	4	7	10	3	1	-22	-15	-6	-8	-13	-21	-24
15000	30	19	3	14	14	3	1	-39	-26	-5	-19	-21	-36	-40
CORPUS CHRISTI TO REGINA														
5000	-2	0	3	-2	0	-6	-8	1	-1	-3	1	-1	-7	-8
10000	-8	-4	0	-5	-5	-11	-13	4	2	0	4	2	-3	-5
15000	-14	-10	-3	-12	-10	-23	-22	4	2	0	6	2	-5	-8
CORPUS CHRISTI TO SCOTT AFB														
5000	8	7	6	3	5	-1	-2	-9	-7	-4	-3	-7	-14	-15
10000	12	9	4	4	7	0	-2	-16	-11	-4	-5	-9	-18	-20
15000	18	11	2	6	8	-2	-4	-29	-19	-3	-11	-14	-28	-32
CORPUS CHRISTI TO SELWING AFB														
5000	9	6	5	4	5	0	-1	-10	-7	-5	-5	-7	-13	-15
10000	15	11	5	6	8	1	0	-19	-13	-6	-8	-12	-20	-22
15000	23	14	3	11	11	1	0	-35	-22	-5	-16	-18	-32	-36
CORPUS CHRISTI TO SWAN AFB														
5000	11	8	4	4	6	0	-1	-11	-9	-4	-4	-7	-14	-15
10000	20	15	3	6	10	2	0	-21	-16	-3	-6	-11	-20	-23
15000	35	26	0	15	17	3	1	-38	-29	-1	-18	-21	-36	-39
CORPUS CHRISTI TO WESTOVER AFB														
5000	11	9	6	5	7	1	0	-13	-9	-6	-6	-9	-15	-16
10000	21	15	7	8	12	3	1	-24	-17	-8	-10	-15	-23	-25
15000	34	22	6	14	18	7	3	-42	-24	-8	-22	-24	-38	-42

HEADWINDS--COMPUTED FOR A 120-MPH AIRSPEED.

0050--MONTHLY ANNUAL EQUIVALENT HEADWINDS FOR INDICATED WIND DIRECTIONALITIES.

WINDS GIVEN IN KNOTS HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN VOTES FOR GREAT CIRCLE AIR ACUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION						
	DIRECTION												DEGREE						
	JAN	APR	JUL	OCT	00450	075	045	JAN	APR	JUL	OCT	00450	075	045	JAN	APR	JUL	OCT	
CORPUS CHRISTI																			
SC00	TO	5	5	5	5	5	0	-2	-9	-7	-5	-5	-7	-13	-15	11	10	7	9
10000		13	9	5	6	6	1	0	-17	-12	-6	-8	-11	-19	-21	11	11	8	11
18000		19	12	4	6	9	0	-1	-31	-20	-6	-15	-17	-30	-33	16	16	9	15
CORPUS CHRISTI																			
SC00	TO	1	3	1	1	1	-2	-4	-1	-1	-3	-2	-2	-7	-8	7	7	5	6
10000		-12	-7	-1	-2	-6	-14	-14	10	6	0	4	4	-1	-2	9	6	6	8
19000		-26	-18	-4	-16	-16	-27	-30	14	13	4	12	19	7	0	15	14	9	13
DA NANG																			
SC00	TO	-2	-4	1	-6	-3	-7	-4	2	4	-1	4	2	-1	-2	5	4	3	6
10000		-3	-1	1	-3	-2	-4	-7	3	1	-1	2	1	-3	-4	6	4	7	7
18000		0	0	-3	-6	-3	-3	-9	0	3	3	6	2	-2	-1	7	7	7	6
DA NANG																			
SC00	TO	2	0	-4	-4	-2	-5	-7	-2	0	4	5	2	-2	-3	5	4	3	6
10000		3	1	-2	-3	0	-5	-6	-2	-1	2	3	0	-4	-5	6	5	7	6
18000		0	1	0	0	0	-4	-6	0	-1	0	0	0	-4	-6	7	6	7	6
DA NANG																			
SC00	TO	1	4	4	5	3	-1	-3	-1	-9	-3	-4	-4	-9	-11	7	7	9	8
10000		-4	-3	-2	-2	-3	-9	-10	4	3	2	2	2	-2	-4	9	7	10	8
18000		-9	-8	2	1	-2	-11	-13	7	7	-2	-3	1	-6	-7	12	10	9	9
DA NANG																			
SC00	TO	2	6	9	-4	3	-3	-4	-2	-6	-9	4	-4	-10	-11	7	7	9	8
10000		5	6	6	0	4	-1	-3	-5	-6	-6	0	-5	-11	-12	9	7	10	8
18000		10	5	0	4	4	-2	-4	-12	-7	3	-4	-6	-13	-15	11	10	9	9
DA NANG																			
SC00	TO	3	6	6	-3	2	-2	-3	-3	-6	-3	3	-3	-8	-10	6	6	7	6
10000		13	12	6	4	5	3	1	-15	-12	-4	-5	-10	-16	-17	8	7	9	8
18000		24	15	4	9	12	4	1	-32	-21	-5	-10	-16	-27	-30	16	9	7	8
DA NANG																			
SC00	TO	4	3	3	-5	1	-1	-4	-4	-1	-3	5	-2	-9	-7	6	5	7	7
10000		11	1	1	2	4	3	-1	-12	-5	-4	-2	-6	-11	-13	7	6	7	7
18000		23	14	3	5	10	2	0	-26	-14	3	-5	-12	-22	-25	8	7	7	7
DA NANG																			
SC00	TO	3	5	5	-4	2	-2	-4	-3	-5	-6	5	-3	-8	-9	6	6	7	7
10000		12	10	4	3	7	2	0	-13	-10	-4	-3	-9	-16	-16	8	6	6	8
18000		22	15	3	6	10	2	0	-25	-17	3	-6	-12	-22	-24	9	6	6	8

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

--VOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIG. OF VOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT MEAN IN D.S. RETURN												STANDARD DEVIATION					
	DIRECT				RETURN													
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
DA NANG																		
5000	3	5	6	-3	2	-2	-4	-3	-5	-7	3	-3	-9	-10	6	7	7	6
10000	7	7	4	0	4	-1	-2	-11	-8	-5	-1	-7	-12	-14	8	7	8	7
18000	14	9	5	6	8	2	0	-25	-16	-5	-8	-13	-22	-24	10	9	8	8
1624 N.M.I.																		
DA NANG																		
5000	0	-2	-2	4	0	-6	-7	0	2	1	-3	0	-5	-6	7	7	9	7
10000	-8	-7	-6	-1	-6	-12	-13	6	7	6	2	5	0	-1	8	7	9	7
18000	-17	-12	3	0	-6	-16	-18	16	11	-3	0	4	-3	-5	11	10	9	8
773 N.M.I.																		
DA NANG																		
5000	1	-2	-12	-1	-3	-9	-11	0	3	13	0	3	-1	-3	9	5	6	7
10000	0	0	-5	-3	-2	-7	-8	0	1	4	4	2	-2	-3	7	5	7	6
18000	1	2	2	3	2	-3	-4	-2	-2	-2	-3	-3	-8	-9	8	8	8	7
936 N.M.I.																		
DA NANG																		
5000	-4	-5	-1	1	-3	-7	-8	4	5	0	-1	1	-2	-3	5	5	6	5
10000	-13	-10	-4	-2	-8	-13	-14	12	10	4	3	7	2	1	6	5	7	5
18000	-27	-17	3	-5	-11	-22	-25	24	16	-3	4	9	0	-2	9	8	7	7
1875 N.M.I.																		
DA NANG																		
5000	0	-2	-13	0	-3	-9	-11	0	3	13	0	3	-1	-2	6	5	6	5
10000	0	0	-5	-3	-2	-7	-8	0	1	4	4	2	-2	-3	7	5	7	5
18000	1	2	2	2	1	-3	-5	-1	-2	-2	-2	-2	-8	-9	9	8	8	7
796 N.M.I.																		
DA NANG																		
5000	1	3	6	-3	1	-3	-4	-1	-3	-6	3	-2	-7	-8	6	7	7	6
10000	-1	1	1	-3	-1	-6	-7	-1	-2	-2	3	-1	-6	-7	8	7	8	7
18000	0	0	4	1	1	-4	-6	-11	-6	-4	-4	-7	-13	-14	10	9	8	8
1478 N.M.I.																		
DA NANG																		
5000	3	6	6	-3	2	-2	-3	-3	-6	-7	3	-4	-9	-10	6	7	7	6
10000	10	10	5	2	4	1	0	-13	-10	-6	-3	-8	-14	-16	8	7	8	7
18000	20	13	4	8	10	3	2	-29	-18	-5	-9	-15	-24	-27	10	9	8	8
1406 N.M.I.																		
DA NANG																		
5000	-2	-3	-11	-1	-4	-10	-11	2	3	11	0	3	-1	-2	6	7	7	6
10000	0	0	-3	-1	-1	-6	-8	0	0	3	1	0	-4	-5	8	7	8	7
18000	-1	2	0	-2	0	-7	-8	1	-2	3	2	0	-6	-8	10	9	9	8
326 N.M.I.																		
DA NANG																		
5000	3	6	7	-3	3	-2	-3	-2	-6	-7	3	-3	-9	-10	6	7	8	7
10000	8	7	5	0	5	0	-7	-10	-3	-5	0	-6	-12	-14	8	7	9	8
18000	15	9	3	6	7	1	0	-24	-14	-3	-6	-11	-20	-23	10	9	8	8
1867 N.M.I.																		

* HEADWINDS - COMPUTED FOR A 120-KT AIRSPEED.

** - DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUVALENT HEADINGS												STANDARD DEVIATION			
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	MAY	JUN	JUL	OCT	JAN	APR	MAY	JUN
DA NANG	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	0	0	-9	-4	-3	-10	0	1	9	4	3	-1	-2	5	5	7
10000	2	0	-3	-3	-1	-7	-1	0	3	3	0	-3	-5	7	7	7
18000	0	2	0	0	0	-6	0	-2	0	0	-1	-6	-7	8	7	7
DA NANG	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	2	5	7	-4	2	-4	-2	-5	-7	5	-3	-8	-10	7	6	7
10000	10	4	6	2	7	1	0	-10	-9	-6	-2	-13	-14	8	9	8
18000	17	12	0	5	8	0	0	-20	-14	7	-5	-10	-20	10	9	8
DA NANG	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-4	0	4	3	0	-4	3	3	-4	-3	-1	-5	-6	7	6	7
10000	2	0	2	2	1	-3	-2	3	-2	-2	-2	-6	-7	5	6	7
18000	1	0	2	1	1	-4	-2	0	-2	0	-1	-6	-7	7	6	7
DA NANG	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-2	6	7	7	5	1	0	3	-5	-7	-7	-9	-10	7	6	7
10000	6	5	6	7	6	2	1	-6	-6	-5	-7	-10	-11	6	6	7
18000	4	0	0	4	1	-3	-4	-4	3	3	-4	-7	-8	7	7	6
DA NANG	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-2	-2	0	1	-1	-7	2	2	3	-2	0	-5	-6	7	7	6
10000	-6	-2	2	1	-1	-8	4	1	-4	-4	-1	-6	-8	7	7	6
18000	3	3	7	7	4	-1	-3	-5	-6	-14	-14	-10	-17	8	10	11
DA NANG	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	3	5	1	1	2	-3	-3	-3	-5	-2	-1	-3	-8	7	7	7
10000	3	1	-4	-2	0	-8	-4	-4	-2	2	0	-1	-7	7	8	8
18000	-6	-7	-17	-14	-11	-19	-21	4	5	13	9	7	0	9	10	12
DA NANG	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	2	-5	-9	-6	-11	-12	-1	-1	6	9	9	6	1	7	7	7
10000	0	-5	-5	-7	-5	-11	-11	0	6	8	8	4	0	6	7	6
18000	-3	1	2	-3	-1	-8	-8	3	-1	-2	4	0	-5	8	7	6
DA NANG	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-4	1	5	4	2	-3	-3	4	-1	-7	-4	-2	-8	6	6	7
10000	3	2	3	5	3	3	-1	-3	-2	-4	-5	-4	-8	5	5	5
18000	4	2	3	4	3	3	-1	-4	-2	-3	-4	-4	-8	6	6	5
DA NANG	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	2	-3	-4	-5	-3	-7	-8	-1	3	4	4	3	-1	7	5	5
10000	-3	-6	-5	-5	-5	-15	-11	1	6	5	5	4	0	6	7	6
18000	-4	-1	-2	-3	-3	-8	-9	4	2	2	4	3	-1	8	7	6

HEADINGS--COMPUTED FOR A 120-KT AIRSPEED.
 EQUIVALENTS--ANNUAL EQUIVALENT HEADINGS FOR INDICATED PER CENT OF LIABILITIES.
 MINUS SIGN DENOTES HEADINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION				
	DIRECT				INDIRECT												
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL
DAVAN	TO												1374 N.M.I.				
5000	4	2	-1	-4	0	-3	-4	-3	-2	2	4	0	-4	-5	4	3	6
10000	8	2	-1	4	3	-1	-2	-8	-2	1	-4	-4	-8	-9	5	6	6
18000	4	4	5	5	4	0	0	-4	-3	-3	-3	-3	-9	-10	6	5	5
DAVAN	TO												1419 N.M.I.				
5000	3	3	0	6	2	3	-1	-3	-3	0	-6	-3	-7	-8	5	4	7
10000	1	0	-1	1	0	-4	-3	-1	0	0	-1	-1	-3	-4	6	5	7
18000	-4	-2	4	4	0	-3	-4	3	2	-4	-4	-1	-6	-7	7	7	6
DAVAN	TO												1129 N.M.I.				
5000	4	4	2	4	3	0	-1	-4	-4	-2	-4	-4	-8	-9	6	5	8
10000	4	3	2	3	3	-1	-2	-4	-3	-2	-3	-4	-8	-9	7	5	8
18000	-2	0	4	3	0	-4	-6	0	0	-4	-3	-2	-7	-8	8	7	7
DAVAN	TO												1666 N.M.I.				
5000	1	2	4	0	1	-3	-4	-2	-3	-4	0	-3	-7	-8	7	6	7
10000	2	4	4	3	3	-1	-2	-6	-6	-3	-3	-6	-11	-12	7	6	8
18000	4	2	3	1	2	-2	-4	-15	-7	-3	-3	-7	-14	-15	9	8	8
DAVAN	TO												1394 N.M.I.				
5000	1	0	2	0	0	-3	-5	-2	0	-2	0	-1	-6	-7	7	5	7
10000	1	0	2	1	0	-4	-5	-3	0	-2	-1	-2	-7	-8	7	6	8
18000	10	5	0	0	3	-2	-3	-13	-7	0	-1	-6	-12	-14	8	7	8
DAVAN	TO												1164 N.M.I.				
5000	2	3	4	0	2	-2	-3	-3	-3	-4	0	-3	-8	-9	7	6	7
10000	3	4	5	2	3	-1	-2	-5	-3	-3	-2	-3	-10	-11	7	6	8
18000	4	3	2	2	3	-2	-3	-9	-3	-3	-2	-3	-11	-12	8	8	7
DAVAN	TO												1830 N.M.I.				
5000	0	2	4	-1	0	-3	-4	-1	-2	-4	1	-2	-6	-7	6	7	6
10000	0	3	3	0	1	-3	-4	-3	-3	-4	-1	-4	-8	-10	7	6	7
18000	-2	-2	2	0	-1	-6	-7	-8	-3	-3	-1	-4	-10	-11	9	8	7
DAVAN	TO												1926 N.M.I.				
5000	1	1	-2	5	0	-2	-3	-1	-1	1	-3	-2	-3	-4	4	5	6
10000	-1	-2	-3	0	-2	-6	-7	0	2	3	-1	0	-3	-4	6	4	6
18000	-7	-5	4	3	-1	-7	-8	6	4	-4	-3	0	-5	-6	7	6	6
DAVAN	TO												1622 N.M.I.				
5000	2	1	-6	-3	-2	-6	-7	-3	-1	6	3	0	-3	-4	5	4	6
10000	3	1	-4	0	0	-4	-5	-3	0	4	0	0	-4	-5	5	5	6
18000	4	4	7	8	5	1	0	-4	-3	-6	-7	-6	-9	-10	6	5	5

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS														STANDARD DEVIATION				
	DIRECT				RETURN														
	JAN	APR	JUL	OCT	00450	475	AB5	JAN	APR	JUL	OCT	00450	475	AB5	JAN	APR	JUL	OCT	
NAVAN	TO																		
5000	1	2	-6	-1	-1	-5	-6	-2	-1	0	1	0	-3	-4	1515 N.M.I.	5	4	3	6
10000	3	1	-4	0	0	-4	-5	-3	0	4	0	0	-4	-5	1515 N.M.I.	5	5	6	6
18000	4	3	7	8	5	1	0	-3	-3	-6	-7	-5	-9	-10	1515 N.M.I.	6	5	6	5
DAVAD	TO																		
5000	1	0	-3	-3	-2	-5	-6	-2	0	3	4	1	-2	-3	1626 N.M.I.	5	4	4	5
10000	-5	-2	-4	-6	-5	-9	-9	5	2	5	6	4	1	0	1626 N.M.I.	4	5	5	5
18000	-7	-3	-6	-4	-5	-9	-10	7	3	6	4	4	1	0	1626 N.M.I.	6	5	6	5
NAVAN	TO																		
5000	1	2	4	3	1	-3	-4	-2	-2	-4	0	-2	-7	-9	1697 N.M.I.	6	6	7	7
10000	1	5	4	2	3	-1	-3	-4	-6	-4	-2	-5	-9	-11	1697 N.M.I.	7	6	8	7
18000	1	0	3	3	1	-4	-5	-11	-5	-3	-2	-5	-11	-13	1697 N.M.I.	5	6	7	7
DAVAD	TO																		
5000	0	4	-5	4	0	-4	-5	0	-3	5	5	-1	-5	-9	1144 N.M.I.	5	4	4	7
10000	3	1	-2	1	0	-3	-4	-3	0	2	-2	-1	-5	-7	1144 N.M.I.	6	5	7	7
18000	2	2	6	8	4	0	-1	-2	-2	-6	-8	-5	-10	-11	1144 N.M.I.	7	6	7	6
DAVAN	TO																		
5000	2	3	4	0	2	-2	-3	-2	-1	-4	0	-3	-7	-8	1469 N.M.I.	6	6	7	7
10000	0	3	4	1	2	-3	-4	-3	-4	-4	-1	-4	-9	-10	1469 N.M.I.	7	6	8	8
18000	-3	-2	3	0	0	-6	-7	-4	-1	-3	-1	-3	-8	-9	1469 N.M.I.	8	8	7	7
DAVAD	TO																		
5000	4	2	-4	-5	-1	-5	-6	-4	-2	4	5	0	-4	-5	1342 N.M.I.	5	4	3	7
10000	5	2	-3	0	1	-3	-4	-5	-1	4	-1	-1	-6	-7	1342 N.M.I.	5	5	6	6
18000	4	4	7	7	5	1	0	-4	-3	-7	-7	-6	-10	-11	1342 N.M.I.	6	5	7	5
DAVAN	TO																		
5000	3	4	4	2	3	-1	-2	-3	-3	-4	-2	-4	-8	-9	1103 N.M.I.	6	5	7	8
10000	4	4	4	3	3	-1	-2	-5	-4	-4	-3	-5	-10	-11	1103 N.M.I.	7	6	9	8
19000	1	1	3	2	1	-3	-4	-3	-2	-3	-2	-3	-8	-10	1103 N.M.I.	8	8	8	7
DAVAN	TO																		
5000	2	3	4	1	2	-2	-3	-3	-3	-4	-1	-3	-8	-9	1878 N.M.I.	7	6	7	7
10000	5	4	4	4	4	3	-1	-9	-4	-5	-5	-7	-11	-13	1878 N.M.I.	7	6	7	7
18000	10	7	3	4	5	0	-1	-21	-13	-4	-7	-11	-19	-21	1878 N.M.I.	9	8	7	8
DAVAN	TO																		
5000	0	0	-1	0	-1	-4	-5	0	0	1	1	0	-3	-4	1107 N.M.I.	5	5	6	6
10000	-7	-4	-4	-7	-6	-10	-11	8	4	5	7	6	2	1	1107 N.M.I.	4	5	6	7
19000	-10	-5	-8	-5	-7	-12	-13	10	6	9	5	7	3	2	1107 N.M.I.	6	5	7	6

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITY.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION					
		DIRECT				STANDARD				STANDARD									
		JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
DHAKHAN																			
5000	TN	0	9	0	0	5	0	-1	-5	-8	-9	0	-6	-11	-13	7	7	922 N.M.I.	
10000		16	12	2	2	7	0	0	-16	-13	-2	-2	-8	-16	-18	8	9	7	6
18000		36	27	0	10	16	4	1	-37	-28	3	-10	-17	-33	-36	13	12	6	9
DHAKHAN																			
5000	TU	3	6	3	0	2	-1	-2	-3	-6	-3	0	-3	-8	-9	6	6	1389 N.M.I.	
10000		14	12	1	3	7	1	0	-14	-12	-1	-3	-8	-14	-16	7	7	6	5
18000		34	27	0	13	17	5	3	-36	-28	3	-13	-19	-33	-36	12	11	7	8
DHAKHAN																			
5000	TN	4	7	4	0	3	-1	-2	-3	-7	-4	0	-4	-8	-9	9	6	1439 N.M.I.	
10000		15	12	2	2	7	1	0	-15	-12	-1	-2	-8	-14	-16	7	7	6	5
18000		35	27	0	11	17	4	1	-37	-28	3	-11	-18	-33	-36	11	10	7	8
DHAKHAN																			
5000	TU	0	0	-7	-1	-3	-8	-10	0	0	7	2	2	-3	-5	6	9	537 N.M.I.	
10000		3	0	-5	-2	-1	-8	-10	-6	-2	5	1	0	-8	-10	10	10	8	8
18000		-2	-1	0	7	0	-8	-10	-10	-7	0	-10	-7	-16	-19	17	14	10	11
DHAKHAN																			
5000	TU	5	7	1	2	3	-1	-3	-5	-7	-2	-1	-4	-10	-11	8	8	7	7
10000		17	14	0	3	8	0	-1	-17	-14	0	-3	-9	-17	-19	9	10	9	9
18000		34	27	1	14	17	5	3	-37	-29	-1	-14	-19	-34	-37	15	13	9	10
DIEGO GARCIA																			
5000	TU	-3	-2	-6	-2	-4	-7	-8	4	2	4	2	3	0	0	4	4	1900 N.M.I.	
10000		1	0	0	0	0	-3	-4	-1	0	0	0	-1	-4	-5	5	5	5	5
18000		-5	0	0	-2	-2	-6	-7	3	-1	0	2	0	-3	-4	7	6	5	5
DIEGO GARCIA																			
5000	TU	7	5	6	5	5	3	2	-7	-4	-4	-5	-6	-9	-9	5	3	1164 N.M.I.	
10000		7	4	2	4	4	0	-1	-7	-4	-2	-4	-5	-10	-11	6	7	6	7
18000		3	-2	-3	-2	-1	-7	-9	-3	2	3	2	0	-5	-6	9	8	9	8
DIEGO GARCIA																			
5000	TU	-2	-1	2	5	0	-2	-3	2	2	-2	-4	0	-4	-5	4	3	1699 N.M.I.	
10000		-5	-4	1	-3	-3	-5	-9	3	3	-2	2	2	-2	-3	6	6	6	6
18000		-7	-3	-3	-5	-5	-9	-10	7	4	4	6	5	1	0	8	6	5	5
DIEGO GARCIA																			
5000	TU	-3	-1	4	5	0	-1	-4	3	2	-4	-5	-1	-5	-6	4	3	1828 N.M.I.	
10000		-4	-4	2	-2	-3	-7	-8	5	3	-3	2	2	-2	-3	6	5	5	5
18000		-7	-3	-3	-6	-5	-9	-10	7	4	4	6	5	1	0	7	6	5	5

MEANWINDS--COMPUTED FOR A 120-KT AIRSPEED.

004--DENOTES ANNUAL EQUIVALENT MEANWINDS FOR INDICATED PER CENT RELIABILITY.

MINUS SIGN DENOTES TAILWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUVALENT HEADING	EQUVALENT HEADING												STANDARD DEVIATION			
		JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
DIFCO GARCIA 4000 10000 18000	TO SINGAPORE	1 0 0	0 3 0	-2 -2	-2 -2	-2 -2	-2 -2	-1 0 0	0 3 0	-2 -2	-2 -2	-2 -2	-2 -2	5 3 3	5 3 3	5 3 3	5 3 3
	TO SINGAPORE	-5 -4 0	-2 -2 -3	-7 -8	-7 -8	-7 -8	-7 -8	5 4 3	5 4 3	2 2 2	2 2 2	2 2 2	2 2 2	6 5 5	6 5 5	6 5 5	6 5 5
	TO SINGAPORE	-7 -3 -4	-5 -5 -5	-9 -10	-9 -10	-9 -10	-9 -10	7 4 4	7 4 4	5 5 5	5 5 5	5 5 5	5 5 5	7 6 6	7 6 6	7 6 6	7 6 6
DJAKARTA 5000 10000 18000	TO MANILA	1 2 0	0 4 2	-1 -2	-1 -2	-1 -2	-1 -2	1 -1 -1	-1 -1 -1	-4 -4	-4 -4	-4 -4	-4 -4	5 4 4	5 4 4	5 4 4	5 4 4
	TO MANILA	-2 -1 1	2 0 0	-4 -5	-4 -5	-4 -5	-4 -5	2 1 -2	2 1 -2	0 -4 -5	0 -4 -5	0 -4 -5	0 -4 -5	6 5 6	6 5 6	6 5 6	6 5 6
	TO MANILA	0 -2 0	1 0 0	-5 -6	-5 -6	-5 -6	-5 -6	3 1 0	3 1 0	0 -4 -5	0 -4 -5	0 -4 -5	0 -4 -5	7 6 6	7 6 6	7 6 6	7 6 6
DJAKARTA 5000 10000 18000	TO MANILA	0 1 7	2 1 2	-1 -2	-1 -2	-1 -2	-1 -2	3 0 0	3 0 0	-3 -3	-3 -3	-3 -3	-3 -3	5 4 4	5 4 4	5 4 4	5 4 4
	TO MANILA	-1 0 3	2 0 0	-3 -4	-3 -4	-3 -4	-3 -4	1 0 -2	1 0 -2	-1 -5 -7	-1 -5 -7	-1 -5 -7	-1 -5 -7	5 5 6	5 5 6	5 5 6	5 5 6
	TO MANILA	1 0 0	1 0 0	-4 -4	-4 -4	-4 -4	-4 -4	-2 0 1	-2 0 1	0 -5 -6	0 -5 -6	0 -5 -6	0 -5 -6	7 6 6	7 6 6	7 6 6	7 6 6
DJAKARTA 5000 10000 18000	TO MANILA	1 0 2	2 2 0	-1 -2	-1 -2	-1 -2	-1 -2	1 0 -2	1 0 -2	-4 -4	-4 -4	-4 -4	-4 -4	5 4 5	5 4 5	5 4 5	5 4 5
	TO MANILA	-2 -2 2	2 2 2	-3 -3	-3 -3	-3 -3	-3 -3	2 2 2	2 2 2	-1 -3 -4	-1 -3 -4	-1 -3 -4	-1 -3 -4	5 5 6	5 5 6	5 5 6	5 5 6
	TO MANILA	-2 -2 2	2 2 2	-3 -3	-3 -3	-3 -3	-3 -3	1 1 1	1 1 1	-2 -2	-2 -2	-2 -2	-2 -2	7 6 6	7 6 6	7 6 6	7 6 6
DJAKARTA 5000 10000 18000	TO MANILA	-5 1 2	2 2 0	-3 -3	-3 -3	-3 -3	-3 -3	3 0 -1	3 0 -1	-5 -5	-5 -5	-5 -5	-5 -5	7 5 5	7 5 5	7 5 5	7 5 5
	TO MANILA	0 -3 1	1 0 -1	-4 -4	-4 -4	-4 -4	-4 -4	0 3 -2	0 3 -2	0 -5 -6	0 -5 -6	0 -5 -6	0 -5 -6	7 7 8	7 7 8	7 7 8	7 7 8
	TO MANILA	4 2 4	3 3 3	-2 -3	-2 -3	-2 -3	-2 -3	-5 -2 -4	-5 -2 -4	-9 -11	-9 -11	-9 -11	-9 -11	9 7 8	9 7 8	9 7 8	9 7 8
DJAKARTA 5000 10000 18000	TO MANILA	-5 0 2	2 4 0	-3 -3	-3 -3	-3 -3	-3 -3	4 0 -2	4 0 -2	-6 -6	-6 -6	-6 -6	-6 -6	7 5 5	7 5 5	7 5 5	7 5 5
	TO MANILA	-1 -2 1	1 1 0	-4 -4	-4 -4	-4 -4	-4 -4	1 3 -2	1 3 -2	0 -5 -6	0 -5 -6	0 -5 -6	0 -5 -6	7 7 8	7 7 8	7 7 8	7 7 8
	TO MANILA	3 2 3	2 2 2	-2 -2	-2 -2	-2 -2	-2 -2	-1 -1 -3	-1 -1 -3	-3 -3	-3 -3	-3 -3	-3 -3	9 7 8	9 7 8	9 7 8	9 7 8
DJAKARTA 5000 10000 18000	TO MANILA	-3 0 -1	-1 -1 -2	-4 -4	-4 -4	-4 -4	-4 -4	1 0 1	1 0 1	1 -2 -3	1 -2 -3	1 -2 -3	1 -2 -3	6 5 5	6 5 5	6 5 5	6 5 5
	TO MANILA	-1 3 3	1 1 1	-2 -2	-2 -2	-2 -2	-2 -2	1 -3 -3	1 -3 -3	-3 -10	-3 -10	-3 -10	-3 -10	7 7 8	7 7 8	7 7 8	7 7 8
	TO MANILA	1 1 1	3 2 2	-4 -4	-4 -4	-4 -4	-4 -4	-2 -3 -4	-2 -3 -4	-4 -11 -12	-4 -11 -12	-4 -11 -12	-4 -11 -12	9 9 10	9 9 10	9 9 10	9 9 10
DJAKARTA 5000 10000 18000	TO MANILA	-4 0 2	2 3 1	-3 -3	-3 -3	-3 -3	-3 -3	4 0 -2	4 0 -2	-7 -7	-7 -7	-7 -7	-7 -7	6 5 6	6 5 6	6 5 6	6 5 6
	TO MANILA	-2 -1 2	2 4 3	-4 -4	-4 -4	-4 -4	-4 -4	1 1 1	1 1 1	0 -5 -6	0 -5 -6	0 -5 -6	0 -5 -6	6 6 7	6 6 7	6 6 7	6 6 7
	TO MANILA	0 0 0	0 0 0	-5 -5	-5 -5	-5 -5	-5 -5	-1 0 0	-1 0 0	-6 -6	-6 -6	-6 -6	-6 -6	8 7 7	8 7 7	8 7 7	8 7 7
DJAKARTA 5000 10000 18000	TO SINGAPORE	-6 1 3	3 1 0	-3 -3	-3 -3	-3 -3	-3 -3	4 0 -3	4 0 -3	-1 -5 -6	-1 -5 -6	-1 -5 -6	-1 -5 -6	7 5 5	7 5 5	7 5 5	7 5 5
	TO SINGAPORE	-1 -2 3	3 3 3	-4 -4	-4 -4	-4 -4	-4 -4	1 2 -3	1 2 -3	-1 -6 -8	-1 -6 -8	-1 -6 -8	-1 -6 -8	7 7 8	7 7 8	7 7 8	7 7 8
	TO SINGAPORE	2 1 2	1 1 1	-3 -3	-3 -3	-3 -3	-3 -3	-2 -1 -2	-2 -1 -2	-2 -7 -9	-2 -7 -9	-2 -7 -9	-2 -7 -9	4 3 3	4 3 3	4 3 3	4 3 3

HEADINGS--COMPUTED FOR A 120-KT AIRSPEED.

000--DENOTES ANNUAL FOUR VALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADINGS.

EQUVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN KNOTS	EQUVALENT HEADWINDS												STANDARD DEVIATION			
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
ROUTE AFR																
5000	-12	-6	-6	-9	-15	-16	-16	-16	-16	-16	-16	-16	10	5	5	0
10000	-22	-13	-14	-15	-16	-23	-23	-23	-23	-23	-23	-23	20	12	13	6
15000	-35	-23	-21	-24	-26	-36	-36	-36	-36	-36	-36	-36	29	19	19	10
ROUTE AFR																
5000	-11	-8	-4	-4	-7	-14	-14	-14	-14	-14	-14	-14	10	7	4	0
10000	-22	-17	-6	-7	-13	-22	-22	-22	-22	-22	-22	-22	14	14	6	2
15000	-40	-26	-8	-21	-22	-36	-36	-36	-36	-36	-36	-36	31	19	7	5
ROUTE AFR																
5000	-11	-9	-5	-4	-9	-15	-15	-15	-15	-15	-15	-15	12	9	5	1
10000	-24	-19	-7	-9	-14	-23	-23	-23	-23	-23	-23	-23	22	17	7	3
15000	-41	-30	-7	-22	-24	-40	-40	-40	-40	-40	-40	-40	37	24	5	4
ROUTE AFR																
5000	-14	-9	-7	-9	-10	-17	-17	-17	-17	-17	-17	-17	13	8	7	2
10000	-24	-17	-14	-15	-18	-26	-26	-26	-26	-26	-26	-26	24	15	14	8
15000	-43	-29	-22	-29	-30	-45	-45	-45	-45	-45	-45	-45	37	25	21	15
ROUTE AFR																
5000	-13	-10	-5	-5	-6	-15	-15	-15	-15	-15	-15	-15	12	9	5	0
10000	-24	-19	-8	-9	-15	-25	-25	-25	-25	-25	-25	-25	23	17	8	3
15000	-44	-30	-9	-24	-26	-41	-41	-41	-41	-41	-41	-41	39	25	7	5
ROUTE AFR																
5000	-12	-9	-4	-4	-4	-15	-15	-15	-15	-15	-15	-15	11	8	4	0
10000	-23	-18	-7	-8	-14	-24	-24	-24	-24	-24	-24	-24	19	15	7	2
15000	-43	-28	-10	-23	-25	-41	-41	-41	-41	-41	-41	-41	34	20	9	4
ROUTE AFR																
5000	-12	-9	-6	-6	-6	-14	-14	-14	-14	-14	-14	-14	11	9	6	2
10000	-25	-19	-8	-11	-16	-24	-24	-24	-24	-24	-24	-24	24	18	8	6
15000	-44	-31	-12	-24	-27	-40	-40	-40	-40	-40	-40	-40	39	28	11	12
ROUTE AFR																
5000	-9	-7	-4	-5	-7	-15	-15	-15	-15	-15	-15	-15	7	5	3	0
10000	-19	-16	-7	-8	-12	-23	-23	-23	-23	-23	-23	-23	13	12	6	5
15000	-38	-23	-10	-22	-22	-36	-36	-36	-36	-36	-36	-36	23	12	8	9
ROUTE AFR																
5000	-15	-11	-6	-6	-10	-16	-16	-16	-16	-16	-16	-16	14	10	6	1
10000	-30	-22	-17	-17	-19	-29	-29	-29	-29	-29	-29	-29	28	20	11	7
15000	-49	-33	-16	-24	-30	-47	-47	-47	-47	-47	-47	-47	45	28	15	13

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

000--DEFINITE ANNUAL EQUIVALENT HEADWINDS FOR INDICATED DEF CRYSTAL HEADWINDS.

SHEET 102

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85
DOVER AFM	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-13	-10	-7	-3	-10	-10	-18	11	9	7	6	8	2	1
10000	-26	-18	-12	-14	-17	-25	-28	25	16	11	13	15	8	6
18000	-24	-31	-14	-20	-30	-43	-46	40	27	18	24	25	15	13
DOVER AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-13	-10	-6	-6	-9	-16	-17	12	9	4	6	7	1	0
10000	-26	-19	-8	-10	-16	-25	-27	24	17	7	9	13	5	3
18000	-45	-31	-9	-24	-26	-41	-45	40	27	9	20	21	9	7
DOVER AFM	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-11	-9	-6	-6	-9	-14	-15	10	8	6	5	7	1	0
10000	-24	-19	-8	-11	-15	-21	-25	22	17	8	10	13	6	5
18000	-23	-31	-12	-21	-24	-40	-44	34	27	12	19	22	12	10
DOVER AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-11	-11	-7	-3	-10	-19	-21	14	10	7	8	9	1	0
10000	-31	-22	-13	-12	-19	-30	-34	29	21	13	11	17	6	5
18000	-51	-34	-18	-30	-32	-44	-53	46	29	17	26	27	14	11
DOVER AFM	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-15	-11	-7	-9	-11	-16	-20	14	10	7	9	9	2	0
10000	-29	-21	-13	-14	-19	-29	-31	28	19	13	13	17	8	6
18000	-40	-33	-19	-30	-31	-47	-51	45	29	19	26	28	16	13
DOVER AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-11	-8	-4	-4	-7	-14	-16	10	7	4	4	6	-1	-2
10000	-22	-17	-7	-7	-13	-23	-25	18	14	6	6	10	2	0
18000	-40	-26	-8	-22	-22	-38	-42	31	19	7	17	16	5	2
DOVER AFM	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-14	-10	-7	-7	-10	-16	-18	13	10	7	7	8	2	1
10000	-24	-20	-10	-12	-17	-27	-29	24	19	9	11	15	7	5
18000	-47	-32	-14	-26	-28	-43	-47	42	24	13	23	24	12	10
DOVER AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-13	-10	-4	-7	-9	-16	-13	12	9	7	6	8	1	0
10000	-27	-20	-9	-11	-16	-26	-24	25	18	8	10	14	6	4
18000	-46	-32	-12	-25	-27	-43	-46	41	28	11	21	23	11	9
DOVER AFM	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	0	0	1	2	0	-6	-7	-1	-1	-2	-3	-2	-9	-10
10000	0	0	0	1	0	-4	-8	-4	-1	-2	-4	-4	-10	-12
18000	2	0	-1	0	0	-9	-12	-14	-5	-3	-9	-8	-18	-21

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--F--NOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR SPAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS - KNOTS -												STANDARD DEVIATION			
	DIRECT						REFLECTED						JAN APR JUL OCT			
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
OVER AFB																
GEN MITCHELL																
5000	-15	-10	-7	-9	-10	-19	-21	13	10	7	8	4	1	0	17	13
10000	-29	-20	-14	-14	-19	-24	-32	27	18	14	12	17	7	5	29	18
18000	-48	-32	-21	-29	-31	-47	-51	41	27	20	24	26	14	11	21	21
OVER AFB																
HILL AFB																
5000	-11	-8	-6	-7	-8	-14	-15	9	7	6	7	7	1	0	5	9
10000	-24	-16	-12	-14	-17	-24	-26	22	14	12	13	14	6	6	10	10
18000	-42	-26	-20	-28	-24	-40	-43	36	24	20	24	25	16	13	15	15
OVER AFB																
HOMESTEAD AFB																
5000	-6	-5	-3	-2	-4	-11	-12	4	4	3	2	3	-2	-4	10	10
10000	-9	-6	-3	-4	-4	-14	-16	6	5	3	3	3	-3	-5	12	12
18000	-19	-12	-4	-12	-11	-22	-25	5	3	3	7	4	-4	-7	16	16
OVER AFB																
HUNTER AFB																
5000	-9	-4	-3	-3	-6	-13	-15	7	5	3	3	4	-2	-4	12	12
10000	-18	-14	-6	-6	-11	-20	-23	12	11	5	5	7	0	-2	14	14
18000	-35	-22	-8	-19	-20	-35	-39	21	12	7	14	12	1	-1	20	20
OVER AFB																
HUNTSVILLE																
5000	-14	-10	-5	-6	-9	-17	-19	13	9	6	6	8	0	-1	13	12
10000	-28	-20	-10	-10	-14	-27	-30	25	18	9	9	14	5	3	14	14
18000	-47	-37	-13	-27	-28	-45	-49	41	26	12	23	23	10	7	20	20
OVER AFB																
JACKSONVILLE																
5000	-9	-6	-3	-3	-6	-13	-15	7	5	3	2	4	-2	-4	12	11
10000	-16	-13	-5	-6	-10	-19	-21	11	10	4	4	6	-1	-3	14	13
18000	-32	-20	-7	-18	-18	-32	-36	18	10	5	12	10	0	-2	19	19
OVER AFB																
KEY WEST																
5000	-6	-5	-3	-3	-5	-11	-12	5	4	3	2	3	-2	-4	10	10
10000	-10	-4	-3	-4	-7	-14	-16	5	6	3	4	4	-2	-3	12	11
18000	-21	-13	-4	-12	-12	-23	-26	8	4	4	8	5	-3	-5	16	16
OVER AFB																
LAFAYETTE AFB																
5000	-17	-7	-5	-3	-8	-14	-15	11	6	5	8	7	2	0	5	6
10000	-24	-14	-13	-15	-17	-23	-25	22	13	12	14	14	4	7	5	9
18000	-38	-26	-22	-28	-28	-38	-41	33	22	21	24	24	15	13	14	14
OVER AFB																
LITTLE ROCK																
5000	-15	-11	-6	-7	-10	-17	-19	13	10	6	7	8	1	0	12	12
10000	-29	-20	-10	-12	-17	-27	-30	27	19	10	11	15	7	5	13	13
18000	-48	-33	-14	-27	-29	-45	-49	44	28	13	23	24	12	9	19	19

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

***DEViates ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN REMOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN										STANDARD DEVIATION		
	DIRECT					RETURN					JAN	APR	JUL OCT
	JAN	APR	JUL	OCT	475	485	JAN	APR	JUL	OCT	475	485	
DOVER AFB													
5000	-16	-12	-7	-9	-11	-22	15	11	3	4	10	2	0
10000	-32	-23	-14	-13	-20	-35	31	22	14	12	18	6	6
18000	-52	-35	-20	-31	-33	-55	47	31	19	27	29	15	11
DOVER AFB													
5000	6	4	6	6	5	-7	-9	-6	-6	-7	-7	-16	-18
10000	13	9	8	10	9	0	-20	-13	-10	-13	-14	-24	-27
18000	24	11	11	14	15	2	-37	-21	-15	-26	-24	-39	-43
DOVER AFB													
5000	-10	-8	-6	-6	-8	-13	5	7	6	5	6	1	0
10000	-23	-17	-9	-11	-15	-22	21	16	9	10	13	7	5
18000	-42	-30	-15	-24	-26	-42	37	27	14	20	22	13	11
DOVER AFB													
5000	-15	-11	-6	-7	-10	-17	13	10	6	7	8	1	0
10000	-29	-21	-10	-11	-17	-31	27	19	10	10	15	6	4
18000	-44	-32	-14	-27	-29	-49	43	28	13	24	25	12	9
DOVER AFB													
5000	-8	-7	-3	-2	-5	-10	7	7	3	2	4	0	-1
10000	-14	-12	-3	-4	-9	-16	13	11	3	4	7	1	0
18000	-32	-22	-2	-15	-18	-32	25	17	1	11	12	3	1
DOVER AFB													
5000	-14	-9	-7	-9	-10	-20	13	8	7	8	8	1	0
10000	-27	-18	-15	-15	-19	-30	25	16	14	13	16	8	6
18000	-45	-30	-22	-29	-31	-48	36	25	20	23	25	13	10
DOVER AFB													
5000	-13	-8	-7	-9	-10	-17	12	7	7	8	8	1	0
10000	-24	-16	-15	-15	-18	-26	23	14	14	14	16	8	6
18000	-40	-27	-22	-23	-29	-44	34	23	21	23	24	14	11
DOVER AFB													
5000	-10	-8	-5	-6	-8	-13	9	7	5	5	6	1	0
10000	-23	-16	-10	-12	-15	-22	21	15	10	11	13	7	6
18000	-42	-29	-18	-25	-27	-39	36	25	17	22	23	14	12
DOVER AFB													
5000	-12	-9	-4	-5	-8	-15	11	8	5	4	6	0	-1
10000	-23	-18	-7	-8	-14	-23	20	16	7	7	11	4	2
18000	-42	-28	-7	-22	-24	-43	35	22	6	18	18	6	4

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	APR	SEP	JAN	APR	JUL	OCT	APR	SEP						
DOVER AFB	TO NIAGARA FALLS												285 N.M.I.					
	-10	-8	-5	-5	-7	-16	-18	7	6	5	3	5	-3	-5	15	14	13	12
	-21	-14	-10	-8	-13	-24	-27	13	9	6	5	8	-1	-3	17	17	11	15
	-34	-25	-14	-18	-22	-37	-42	15	16	11	8	12	-1	-4	23	23	14	22
DOVER AFB	TO PATRICK AFB												701 N.M.I.					
	-7	-5	-3	-2	-5	-12	-13	5	4	3	2	3	-3	-4	11	11	9	10
	-12	-11	-4	-4	-3	-16	-18	6	7	3	3	4	-3	-4	13	13	8	12
	-24	-16	-5	-14	-14	-27	-30	10	5	4	9	6	-3	-5	18	18	10	16
DOVER AFB	TO PITTSBURGH												234 N.M.I.					
	-15	-12	-7	-8	-11	-20	-22	14	11	9	8	9	1	0	15	14	10	12
	-31	-22	-14	-12	-19	-31	-34	29	20	14	11	17	7	5	16	16	11	15
	-50	-34	-20	-24	-32	-49	-54	43	30	19	23	27	13	10	25	23	13	23
DOVER AFB	TO REGINA												1403 N.M.I.					
	-12	-7	-6	-9	-9	-15	-17	11	6	6	8	7	1	0	11	10	8	10
	-24	-15	-14	-15	-17	-25	-27	21	13	14	14	15	8	6	11	11	7	10
	-38	-26	-22	-27	-28	-39	-41	31	21	20	22	22	13	11	16	15	10	15
DOVER AFB	TO SCOTT AFB												679 N.M.I.					
	-16	-11	-7	-4	-11	-14	-21	14	10	7	8	9	2	0	13	12	8	11
	-30	-22	-13	-13	-19	-30	-32	24	20	13	12	17	8	6	14	14	10	13
	-50	-33	-18	-30	-31	-44	-52	46	29	18	26	28	15	12	20	20	12	20
DOVER AFB	TO SELFRIDGE AFB												393 N.M.I.					
	-14	-10	-7	-8	-10	-18	-21	12	9	7	7	8	0	-1	14	14	9	12
	-28	-19	-14	-12	-18	-29	-32	24	17	13	10	15	5	3	16	16	11	16
	-44	-32	-20	-27	-30	-46	-50	36	26	18	20	23	10	7	23	22	13	22
DOVER AFB	TO SHAW AFB												392 N.M.I.					
	-10	-7	-3	-4	-6	-14	-16	3	4	3	4	5	-2	-4	13	12	9	12
	-20	-16	-7	-6	-13	-23	-25	14	13	6	6	9	0	-2	15	15	10	14
	-39	-24	-10	-22	-22	-38	-43	26	15	8	16	15	2	0	21	21	12	20
DOVER AFB	TO WESTOVER AFB												227 N.M.I.					
	9	5	5	6	5	-2	-4	-10	-7	-5	-7	-8	-16	-14	15	15	10	12
	14	12	9	10	10	0	-1	-22	-17	-10	-12	-15	-26	-29	17	17	11	15
	25	12	11	18	15	1	-1	-40	-23	-15	-26	-25	-42	-46	24	24	14	23
DOVER AFB	TO WRIGHTSMITH												476 N.M.I.					
	-12	-9	-7	-7	-9	-17	-19	10	8	6	6	7	0	-2	14	14	9	11
	-25	-17	-13	-12	-17	-27	-30	20	14	12	9	13	4	1	15	16	11	14
	-41	-24	-19	-24	-27	-42	-46	28	22	15	16	19	7	3	22	22	13	21

*HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

**A—PREDICTS ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
+—PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWINDS IN KNOTS										STANDARD DEVIATION			
	DIRECT					W E A D W I N D S					LATITUDE			
	JAN	APR	JUL	OCT	00450	475	485	JAN	APR	JUL	OCT	00450	475	485
DUTCH HARBOR	TO YELLOWKNIFE													
5000	-8	-4	-5	-9	-7	-13	-14	6	3	4	7	4	0	-2
10000	-17	-10	-12	-13	-13	-19	-21	14	8	11	11	11	5	3
18000	-27	-19	-18	-21	-21	-30	-32	20	14	16	15	16	6	6
DUTCH HARBOR	TO EDMONTON													
5000	5	3	4	5	4	-1	-2	-7	-3	-5	-6	-6	-11	-13
10000	11	6	7	11	8	2	0	-13	-7	-7	-12	-10	-17	-18
18000	19	11	11	16	14	4	2	-23	-14	-13	-20	-18	-27	-30
DUTCH HARBOR	TO EISENBERG AFB													
5000	-1	3	4	3	2	-4	-4	0	-3	-6	-3	-4	-11	-12
10000	4	4	7	7	5	-2	-5	-6	-5	-8	-8	-7	-16	-18
18000	9	8	9	10	9	-2	-5	-15	-11	-11	-13	-13	-25	-28
DUTCH HARBOR	TO ELVERFJORD AFB													
5000	0	3	7	3	3	-4	-6	-1	-4	-7	-4	-5	-12	-14
10000	6	4	7	8	6	-3	-5	-9	-6	-5	-10	-9	-18	-21
18000	13	9	10	11	10	-2	-5	-18	-12	-13	-15	-15	-28	-31
DUTCH HARBOR	TO FORT LEWIS													
5000	8	3	7	5	5	0	-2	-10	-5	-7	-8	-8	-14	-16
10000	13	8	8	10	9	2	0	-16	-10	-9	-12	-12	-19	-21
18000	21	13	14	18	15	6	3	-27	-18	-17	-23	-21	-32	-35
DUTCH HARBOR	TO HICKAM AFB													
5000	-5	3	2	6	1	-5	-6	2	-4	-3	-8	-4	-10	-12
10000	-4	0	-3	4	-1	-7	-9	0	-4	1	-8	-3	-10	-11
18000	-5	-1	0	1	-1	-9	-11	-5	-6	-3	-10	-6	-14	-17
DUTCH HARBOR	TO JUNEAU													
5000	2	3	5	4	3	-3	-4	-3	-4	-6	-5	-5	-12	-13
10000	8	4	6	8	6	-1	-3	-11	-6	-7	-10	-9	-17	-19
18000	16	10	11	14	12	1	-1	-21	-13	-13	-17	-16	-28	-31
DUTCH HARBOR	TO KODIAK													
5000	4	4	8	4	5	-3	-6	-6	-4	-9	-6	-7	-16	-18
10000	9	4	8	11	8	-1	-4	-12	-7	-9	-12	-10	-21	-23
18000	17	11	13	14	13	0	-3	-22	-14	-15	-17	-18	-32	-35
DUTCH HARBOR	TO LARSON AFB													
5000	7	3	6	5	5	0	-2	-9	-4	-7	-7	-7	-13	-15
10000	12	7	8	9	8	2	0	-15	-9	-9	-12	-12	-19	-21
18000	21	13	14	18	16	6	3	-27	-19	-16	-23	-21	-32	-34

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS													STANDARD DEVIATION					
	DIRECT						LEFT												
	JAN	APR	JUL	OCT	00450	075	075	075	075	075	075	075	075	075	075	075	JAN	APR	JUL
DUTCH HARBOR	MIDWAY ISLAND													1614 N.M.I.					
5000	-12	-3	-8	-4	-9	-14	-18									13	10	9	10
10000	-14	-11	-11	-4	-10	-18	-20									12	11	9	10
18000	-23	-17	-8	-11	-15	-25	-27									16	14	11	13
DUTCH HARBOR	PRUDHOE BAY													1096 N.M.I.					
5000	-2	2	5	1	1	-5	-7									11	9	8	10
10000	1	4	7	5	4	-3	-5									14	11	10	11
18000	4	6	7	7	6	-4	-7									18	15	14	15
DUTCH HARBOR	SHEPHERD													695 N.M.I.					
5000	-7	-5	-9	-10	-3	-17	-20									12	13	11	14
10000	-14	-9	-11	-16	-13	-23	-26									16	15	13	15
18000	-20	-16	-17	-22	-19	-32	-36									22	19	17	20
DUTCH HARBOR	YAKIMA													1765 N.M.I.					
5000	8	3	7	6	6	0	-1									11	9	7	9
10000	13	8	9	9	9	2	0									13	10	9	10
18000	21	13	14	18	16	6	3									17	15	13	15
DUTCH HARBOR	YELLOWKNIFE													1673 N.M.I.					
5000	1	3	3	5	3	-2	-3									9	8	7	8
10000	7	5	6	9	6	0	-1									11	9	8	9
18000	14	10	10	13	11	2	0									15	13	11	13
EDMONTON	EGLIN AFB													1813 N.M.I.					
5000	7	3	2	5	4	-1	-2									9	9	7	8
10000	14	9	6	10	9	3	2									9	9	7	9
18000	19	14	10	15	14	6	4									14	13	9	13
EDMONTON	ELLISON AFB													1207 N.M.I.					
5000	-1	0	1	-4	-1	-7	-8									4	8	7	9
10000	-10	-4	-5	-7	-7	-13	-15									11	9	8	9
18000	-19	-7	-8	-14	-13	-22	-24									15	13	11	13
EDMONTON	ELLINGTON AFB													1646 N.M.I.					
5000	3	1	-1	3	1	-4	-5									9	9	7	8
10000	10	6	2	8	6	0	-1									9	9	7	8
18000	14	9	4	12	9	0	-1									14	13	9	13
EDMONTON	ELLSWORTH AFB													664 N.M.I.					
5000	6	3	1	5	3	-3	-5									12	11	9	11
10000	17	9	7	12	11	3	2									11	10	9	10
18000	22	12	10	18	16	3	1									18	17	13	17

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**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT												RETURN					
	JAN	APR	JUL	OCT	***ASJ	ATD	AB5	JAN	APR	JUL	OCT	***ASJ	ATD	AB5	JAN	APR	JUL	OCT
EDMONTON																		
5000	-2	0	0	-4	-1	-7	-8	0	0	0	3	0	-5	-6	9	8	7	8
10000	-10	-4	-5	-8	-7	-14	-15	9	4	4	6	5	0	-2	11	9	8	9
18000	-20	-10	-8	-16	-14	-24	-26	17	7	7	12	10	1	-1	16	14	12	13
EDMONTON																		
5000	-5	-2	0	-2	-3	-3	-9	4	2	0	2	1	-2	-4	8	7	6	7
10000	0	0	-2	-3	-2	-8	-9	-2	0	2	1	0	-6	-7	11	9	7	9
18000	-3	-4	-7	-4	-5	-15	-17	-7	-1	4	-2	-1	-12	-15	17	16	11	15
EDMONTON																		
5000	5	2	0	4	2	-3	-4	-7	-3	-1	-5	-4	-10	-12	9	9	7	8
10000	13	7	4	9	6	1	0	-16	-9	-5	-11	-10	-17	-19	5	9	7	9
18000	17	11	8	14	11	3	1	-26	-17	-11	-20	-18	-28	-31	15	14	9	13
EDMONTON																		
5000	8	4	3	6	5	0	-1	-10	-5	-3	-7	-7	-13	-14	9	9	7	8
10000	15	10	7	11	10	4	3	-19	-11	-8	-13	-13	-20	-21	5	9	7	9
18000	21	15	12	18	16	7	5	-30	-20	-14	-23	-21	-31	-34	14	13	9	13
EDMONTON																		
5000	-3	-2	-3	-2	-3	-3	-9	2	2	3	2	2	-2	-3	8	7	6	7
10000	6	2	0	2	2	-3	-4	-9	-3	0	-4	-4	-10	-12	9	8	7	8
18000	7	2	-1	5	2	-6	-8	-17	-9	-1	-11	-9	-20	-22	16	14	10	14
EDMONTON																		
5000	10	5	4	7	6	0	0	-11	-6	-4	-8	-8	-14	-15	9	9	7	9
10000	19	11	11	12	13	7	5	-21	-13	-11	-14	-15	-21	-23	9	9	7	9
18000	26	18	15	20	19	10	8	-34	-23	-17	-25	-24	-34	-37	14	13	9	13
EDMONTON																		
5000	9	4	3	7	5	0	-2	-11	-5	-3	-8	-7	-14	-15	10	10	8	9
10000	17	10	9	13	12	5	3	-20	-12	-10	-14	-14	-21	-23	10	10	3	10
18000	24	16	13	20	17	8	6	-31	-20	-16	-25	-23	-33	-36	15	14	10	14
EDMONTON																		
5000	0	0	-1	0	0	-6	-7	0	0	1	0	0	-6	-7	5	9	7	9
10000	11	5	3	7	6	0	-1	-13	-6	-3	-9	-8	-15	-16	10	9	3	9
18000	14	6	3	11	8	-2	-4	-22	-11	-7	-17	-14	-26	-28	17	16	12	16
EDMONTON																		
5000	10	5	5	8	6	0	0	-12	-6	-5	-9	-8	-15	-16	10	9	7	9
10000	20	12	12	14	14	3	6	-22	-13	-13	-15	-16	-23	-24	9	10	8	9
18000	29	19	18	21	21	12	10	-35	-23	-20	-26	-26	-36	-38	14	14	9	14

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*																	STANDARD DEVIATION	
	DIRECT				FEYEN														
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL		OCT
EDMONTON		TO																	1513 M.M.I.
5000	2	0	-1	2	0	-5	-6	-4	-1	1	-3	-2	-8	-9	5	9	7	8	
10000	10	5	2	7	5	0	-1	-13	-7	-3	-9	-8	-15	-16	9	9	7	9	
18000	14	8	4	12	8	0	-1	-24	-14	-7	-17	-15	-25	-28	15	14	9	13	
EDMONTON		TO																	1326 M.M.I.
5000	-4	-2	-2	-2	-3	-7	-9	3	2	2	2	2	-2	-3	7	7	5	7	
10000	4	1	-1	0	0	-4	-6	-6	-2	0	-1	-2	-8	-10	5	8	7	8	
18000	3	0	-4	2	0	-9	-11	-13	-6	1	-8	-6	-17	-19	16	15	10	14	
EDMONTON		TO																	1472 M.M.I.
5000	10	5	3	7	6	2	-1	-11	-6	-4	-8	-8	-14	-16	10	10	8	9	
10000	18	11	13	13	12	5	4	-20	-12	-11	-15	-15	-22	-24	10	10	8	10	
18000	24	17	15	21	19	10	8	-33	-21	-17	-25	-24	-34	-37	15	14	10	14	
EDMONTON		TO																	1141 M.M.I.
5000	5	4	2	7	5	-1	-3	-10	-5	-2	-7	-6	-13	-15	10	10	8	10	
10000	17	9	8	13	11	4	3	-19	-10	-9	-14	-13	-21	-22	10	10	9	10	
18000	23	13	12	19	16	6	4	-29	-19	-15	-24	-21	-32	-35	16	15	11	15	
EDMONTON		TO																	521 M.M.I.
5000	-10	-5	-2	-7	-6	-13	-15	10	5	2	6	5	-1	-3	11	10	8	11	
10000	-12	-8	-5	-13	-10	-18	-20	9	7	5	12	8	0	-1	14	11	10	11	
18000	-17	-13	-12	-18	-15	-28	-31	9	9	10	12	10	-2	-5	20	19	15	19	
EDMONTON		TO																	1070 M.M.I.
5000	-6	-3	0	-3	-3	-9	-10	5	3	0	3	2	-3	-4	9	8	5	8	
10000	-4	-3	-3	-6	-4	-11	-13	1	2	3	5	2	-3	-5	12	10	8	10	
18000	-8	-7	-9	-8	-9	-19	-22	-2	1	6	2	2	-9	-11	18	17	12	16	
EDMONTON		TO																	1806 M.M.I.
5000	7	4	2	6	4	-1	-2	-9	-5	-3	-6	-6	-12	-13	9	9	7	8	
10000	15	9	7	10	10	4	2	-18	-11	-7	-12	-12	-19	-20	9	9	7	9	
18000	20	14	11	17	15	6	4	-29	-20	-13	-22	-21	-30	-33	14	13	9	13	
EDMONTON		TO																	1302 M.M.I.
5000	4	1	0	3	1	-4	-5	-5	-2	0	-4	-3	-9	-10	5	9	7	9	
10000	12	7	4	9	7	1	0	-15	-8	-5	-10	-10	-16	-18	10	9	8	9	
18000	17	9	6	13	10	1	0	-25	-15	-9	-19	-17	-27	-30	16	15	10	14	
EDMONTON		TO																	1411 M.M.I.
5000	3	1	-1	3	1	-4	-5	-4	-1	0	-3	-2	-8	-9	9	9	7	8	
10000	11	6	3	8	6	0	-1	-14	-7	-4	-9	-9	-15	-17	10	9	8	9	
18000	15	8	5	12	9	0	-1	-24	-14	-9	-18	-16	-26	-29	15	14	10	14	

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION				
	DIRECT					RETURN					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	
EDMONTON	TO														1489 N.M.I.
5000	5	1	4	7	4	-1	-3	-5	-2	-4	-8	-5	-11	-13	9 8 9 9
10000	5	4	5	7	5	0	-1	-6	-5	-6	-8	-7	-12	-14	5 8 8 8
18000	8	9	8	10	8	0	-1	-12	-12	-10	-14	-13	-21	-22	12 12 11 12
EDMONTON	TO														1202 N.M.I.
5000	10	4	4	8	4	0	-2	-11	-5	-4	-9	-8	-15	-17	11 10 9 11
10000	19	11	12	15	14	7	5	-21	-12	-13	-16	-16	-23	-25	10 11 9 10
18000	28	18	18	23	21	11	9	-32	-21	-20	-26	-25	-35	-38	16 15 11 15
EDMONTON	TO														750 N.M.I.
5000	-4	-1	0	-1	-2	-8	-9	3	1	0	1	1	-4	-6	10 9 7 9
10000	4	2	0	0	1	-5	-7	-8	-3	0	-2	-4	-11	-12	11 10 9 10
18000	4	0	-2	2	0	-10	-12	-15	-6	-1	-10	-8	-20	-23	18 17 13 17
EDMONTON	TO														1896 N.M.I.
5000	9	5	3	6	5	0	-1	-10	-4	-3	-7	-7	-13	-14	9 9 7 8
10000	17	10	8	11	11	5	3	-19	-12	-9	-12	-13	-20	-21	9 9 7 9
18000	23	16	13	18	17	8	6	-32	-21	-15	-23	-22	-32	-35	14 13 9 13
EDMONTON	TO														1599 N.M.I.
5000	9	4	3	6	5	0	-2	-10	-5	-3	-7	-6	-13	-14	10 9 7 9
10000	16	10	8	12	11	4	3	-19	-11	-9	-13	-13	-20	-22	10 10 8 9
18000	22	15	12	19	16	7	5	-31	-20	-15	-24	-22	-32	-35	15 14 9 14
EDMONTON	TO														1957 N.M.I.
5000	8	4	3	6	5	0	-1	-9	-5	-3	-7	-6	-12	-13	9 8 7 8
10000	15	10	7	10	10	4	2	-18	-12	-8	-12	-13	-19	-21	9 9 7 9
18000	21	15	11	17	15	7	5	-31	-21	-14	-22	-22	-31	-34	13 13 8 13
EDMONTON	TO														760 N.M.I.
5000	-5	-1	-1	-6	-4	-10	-12	4	1	1	6	2	-3	-5	11 9 8 10
10000	-13	-8	-6	-13	-10	-18	-20	12	7	6	11	8	1	0	13 10 9 10
18000	-23	-13	-10	-19	-16	-23	-30	20	10	8	16	13	2	0	17 16 13 16
EDMONTON	TO														1324 N.M.I.
5000	-3	-2	-1	-5	-3	-9	-10	2	1	1	4	1	-3	-5	10 8 7 9
10000	-12	-6	-6	-10	-9	-15	-17	10	5	5	8	6	0	-1	12 9 8 9
18000	-22	-13	-10	-18	-16	-26	-29	18	10	9	15	12	3	0	16 14 12 14
EDMONTON	TO														441 N.M.I.
5000	-9	-4	-1	-6	-5	-13	-14	9	4	1	5	4	-2	-4	11 11 9 11
10000	-8	-5	-4	-10	-7	-15	-17	5	4	3	9	5	-2	-4	13 11 10 11
18000	-12	-10	-10	-13	-12	-24	-27	3	5	9	6	5	-6	-9	20 19 15 19

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DEFINIES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*										STANDARD DEVIATION			
	DIRECT					RETURN								
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85
EDMONTON														
5000	7	3	2	6	4	-1	-3	-9	-4	-2	-6	-6	-12	-14
10000	15	9	6	11	10	3	1	-17	-10	-7	-12	-12	-19	-20
18000	20	13	10	17	14	5	3	-28	-18	-13	-22	-20	-30	-33
EDMONTON														
5000	10	5	4	8	6	0	-1	-11	-6	-5	-9	-8	-15	-17
10000	19	11	12	14	13	7	5	-21	-12	-13	-15	-16	-22	-24
18000	28	18	17	22	20	11	9	-34	-22	-19	-26	-25	-35	-38
EDMONTON														
5000	10	4	7	10	7	1	0	-11	-5	-7	-11	-9	-15	-17
10000	17	9	14	15	13	7	6	-18	-10	-14	-16	-15	-21	-23
18000	25	16	21	22	21	12	10	-29	-19	-23	-25	-24	-33	-35
EDMONTON														
5000	-4	-2	-1	-2	-3	-7	-9	4	2	2	2	2	-2	-3
10000	3	1	-1	0	0	-5	-7	-6	-2	1	-1	-2	-6	-10
18000	2	0	-5	0	-1	-11	-13	-12	-5	1	-7	-5	-16	-19
EDMONTON														
5000	10	5	6	9	7	1	0	-12	-6	-6	-10	-9	-15	-17
10000	20	12	13	15	14	8	6	-22	-13	-14	-16	-17	-23	-25
18000	29	19	20	22	22	13	11	-35	-23	-21	-26	-26	-36	-39
EDMONTON														
5000	8	4	2	6	4	-1	-2	-9	-5	-3	-7	-6	-13	-14
10000	16	9	7	12	10	4	2	-18	-11	-8	-13	-13	-20	-21
18000	21	14	11	18	15	6	4	-30	-19	-14	-23	-21	-32	-34
EDMONTON														
5000	10	4	4	8	6	0	-2	-11	-5	-4	-9	-8	-15	-17
10000	19	10	12	15	13	6	4	-20	-11	-12	-16	-15	-23	-25
18000	27	17	17	23	20	10	8	-31	-20	-19	-26	-24	-35	-37
EDMONTON														
5000	9	3	3	9	5	-2	-4	-10	-4	-3	-8	-7	-15	-17
10000	19	10	11	16	13	6	4	-20	-10	-11	-16	-15	-23	-24
18000	27	15	15	23	19	8	5	-30	-18	-17	-25	-23	-34	-37
EDMONTON														
5000	-5	-3	0	-3	-3	-9	-10	4	2	1	2	2	-3	-4
10000	1	0	-2	-2	-1	-7	-9	-4	-1	1	0	-1	-7	-9
18000	0	-2	-6	-1	-3	-13	-16	-10	-3	2	-5	-4	-15	-18

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS														STANDARD DEVIATION			
	DIRECT							RETURN										
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85				
EDMONTON															1678 N.M.I.			
5000	10	5	5	9	6	0	0	-12	-6	-6	-9	-9	-15	-17	10	9	8	9
10000	20	12	13	15	14	8	6	-22	-13	-14	-16	-17	-23	-25	10	10	8	9
18000	29	19	19	22	21	13	10	-35	-23	-21	-26	-26	-36	-39	14	14	10	14
EDMONTON															1743 N.M.I.			
5000	5	3	1	5	3	-2	-3	-7	-4	-1	-5	-5	-10	-12	9	9	7	8
10000	13	7	4	9	8	1	0	-16	-9	-5	-11	-10	-17	-19	9	9	7	9
18000	17	12	9	15	12	4	2	-27	-19	-11	-20	-19	-28	-31	14	13	9	13
EDMONTON															1496 N.M.I.			
5000	10	4	2	9	5	0	-1	-11	-5	-6	-10	-8	-15	-17	10	10	8	10
10000	20	11	14	15	15	8	6	-21	-12	-14	-17	-16	-23	-25	10	10	3	10
18000	29	19	20	23	22	13	11	-33	-22	-22	-26	-26	-35	-38	15	14	10	14
EDMONTON															1183 N.M.I.			
5000	-5	-2	0	-2	-2	-3	-9	4	2	0	2	1	-3	-4	8	8	6	7
10000	-1	-1	-3	-4	-3	-9	-11	-1	0	2	2	0	-5	-7	11	10	7	9
18000	-4	-5	-8	-5	-6	-16	-18	-5	0	5	-1	0	-11	-13	17	16	11	15
EDMONTON															1551 N.M.I.			
5000	10	5	5	8	6	0	-1	-11	-6	-5	-9	-8	-15	-16	10	10	8	9
10000	20	11	13	15	14	7	6	-21	-13	-13	-16	-16	-23	-25	10	10	8	10
18000	29	19	19	22	21	12	10	-34	-22	-20	-26	-25	-35	-38	15	14	10	14
EDMONTON															1367 N.M.I.			
5000	0	0	1	-4	-1	-6	-8	0	0	-1	3	0	-6	-7	9	8	7	9
10000	-9	-3	-5	-6	-6	-12	-13	8	3	5	5	5	0	-1	5	8	7	8
18000	-17	-7	-3	-11	-11	-19	-21	14	5	7	8	8	0	-1	13	12	10	11
EDMONTON															377 N.M.I.			
5000	10	3	2	3	5	-2	-4	-11	-3	-3	-9	-7	-15	-18	13	12	11	12
10000	19	10	11	16	13	6	4	-20	-10	-11	-17	-15	-23	-25	12	11	10	11
18000	27	15	15	23	19	8	5	-29	-17	-16	-25	-22	-34	-37	18	17	14	18
EDMONTON															1320 N.M.I.			
5000	9	4	3	7	5	0	-2	-11	-5	-3	-8	-7	-14	-16	10	10	8	10
10000	18	10	9	13	12	5	3	-20	-11	-10	-14	-14	-21	-23	10	10	8	10
18000	25	15	14	21	18	8	6	-31	-20	-15	-25	-23	-33	-36	16	15	10	15
EDMONTON															1380 N.M.I.			
5000	10	4	5	9	6	0	-1	-11	-5	-5	-10	-8	-15	-17	10	10	8	10
10000	20	11	13	15	14	7	6	-21	-12	-14	-16	-16	-23	-25	10	10	8	10
18000	29	18	19	23	21	12	10	-33	-21	-21	-26	-25	-35	-38	15	14	11	15

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.*												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
EDMONTON																		
5000	9	5	4	7	6	0	-1	-11	-6	-4	-8	-8	-14	-15	9	9	7	9
10000	18	11	10	12	12	6	5	-20	-13	-10	-13	-14	-21	-22	9	9	7	9
18000	25	17	14	19	18	9	7	-33	-22	-16	-24	-23	-33	-36	14	13	9	13
EDMONTON																		
5000	0	1	2	3	1	-4	-5	0	-1	-2	-4	-2	-8	-9	8	8	8	9
10000	-3	1	0	0	-1	-6	-7	2	-2	0	-1	-1	-6	-7	8	8	8	9
18000	-4	1	0	0	-1	-8	-10	0	-4	-1	-3	-2	-10	-11	11	11	10	11
EDMONTON																		
5000	10	5	6	9	7	1	0	-12	-5	-7	-10	-9	-14	-17	10	9	8	9
10000	20	11	14	16	15	8	7	-21	-13	-14	-17	-17	-23	-25	10	10	8	9
18000	28	19	21	22	22	13	11	-34	-22	-22	-26	-26	-35	-38	14	13	10	14
EDMONTON																		
5000	10	4	5	9	6	0	-1	-11	-5	-5	-10	-8	-15	-17	11	10	9	10
10000	20	11	13	16	14	3	6	-21	-12	-14	-17	-16	-23	-25	10	10	9	10
18000	29	18	20	23	22	12	10	-32	-21	-21	-26	-25	-35	-38	15	14	11	15
EDMONTON																		
5000	-10	-5	-1	-6	-6	-13	-15	9	4	1	5	4	-2	-4	11	10	8	11
10000	-9	-6	-4	-11	-8	-16	-18	6	5	4	10	6	-1	-3	13	11	10	11
18000	-13	-10	-11	-15	-13	-25	-28	4	6	9	8	6	-5	-8	19	19	15	19
EDMONTON																		
5000	0	0	0	-2	0	-8	-10	-1	-1	-1	0	-1	-9	-10	11	11	10	12
10000	-8	-2	-4	-6	-5	-12	-14	6	2	3	4	3	-3	-4	11	10	9	10
18000	-13	-4	-5	-8	-8	-18	-21	8	0	3	3	3	-6	-9	16	15	13	15
EGLIN AFB																		
5000	-10	-7	-3	-4	-4	-13	-15	9	7	3	4	5	-1	-3	12	11	8	10
10000	-20	-15	-1	-6	-10	-20	-22	19	15	1	6	9	0	-1	12	12	8	11
18000	-37	-30	1	-17	-20	-37	-40	35	28	-1	15	18	2	0	17	17	9	16
EGLIN AFB																		
5000	-8	-5	-2	-5	-5	-12	-13	6	4	2	5	4	-2	-3	10	10	8	9
10000	-17	-11	-5	-10	-11	-19	-21	13	9	4	8	8	1	0	11	11	8	11
18000	-30	-22	-11	-20	-20	-32	-35	19	16	10	15	14	5	2	17	16	9	15
EGLIN AFB																		
5000	-4	-4	-1	-1	-3	-8	-9	4	4	1	0	2	-2	-3	8	8	5	7
10000	-17	-13	-2	-7	-10	-17	-19	16	13	2	6	8	2	0	9	8	6	8
18000	-35	-29	-4	-17	-21	-34	-37	31	26	4	15	18	6	4	14	13	8	12

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*												STANDARD DEVIATION			
	DIFFERENTIAL						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00450	A75	00450	A75	00450	A75	00450	A75	00450	A75	00450	A75
EGLIN AFB	ENGLAND AFB															
5000	-9	-7	-2	-4	-6	-13	-15	-15	8	7	2	4	4	-2	-4	315 N.M.I.
10000	-20	-15	-1	-7	-10	-21	-23	-23	19	14	2	7	9	0	-1	12
18000	-38	-31	-1	-18	-21	-38	-42	-42	34	28	0	16	18	3	0	13
EGLIN AFB	FORT BLISS															
5000	-8	-6	-2	-3	-5	-11	-13	-13	7	5	2	3	4	-2	-3	1022 N.M.I.
10000	-19	-15	0	-7	-10	-19	-21	-21	19	14	0	6	9	1	0	10
18000	-37	-30	0	-17	-21	-36	-39	-39	34	28	0	15	16	4	1	16
EGLIN AFB	FORT BRAGG/POPE															
5000	11	9	4	3	5	0	-2	-2	-11	-8	-4	-3	-7	-14	-16	473 N.M.I.
10000	19	15	5	5	10	1	0	0	-21	-17	-5	-6	-12	-22	-24	12
18000	33	23	5	16	17	5	2	2	-39	-24	-5	-19	-21	-37	-41	13
EGLIN AFB	FORT CAMPBELL															
5000	0	0	0	0	0	-8	-10	-10	-2	-1	0	0	-1	-9	-11	14
10000	-2	-2	0	-1	-1	-10	-12	-12	-3	0	0	0	-1	-10	-12	13
18000	-8	-9	-3	-4	-6	-18	-21	-21	-10	-1	3	-1	-2	-14	-17	20
EGLIN AFB	FORT CARSON															
5000	-7	-5	-2	-5	-5	-12	-13	-13	6	4	2	4	3	-2	-4	11
10000	-19	-14	-3	-9	-11	-20	-22	-22	17	12	3	8	9	1	0	11
18000	-35	-28	-8	-20	-22	-35	-39	-39	28	21	8	17	17	7	5	17
EGLIN AFB	FORT EUSTIS															
5000	10	7	4	3	5	-1	-2	-2	-11	-8	-4	-4	-7	-14	-16	671 N.M.I.
10000	19	14	6	4	10	2	0	0	-21	-17	-6	-7	-12	-22	-24	12
18000	31	19	6	16	16	4	2	2	-40	-27	-7	-20	-22	-38	-42	18
EGLIN AFB	FORT HODD															
5000	-9	-7	-3	-4	-6	-13	-15	-15	9	6	3	4	5	-1	-3	571 N.M.I.
10000	-20	-15	-1	-7	-10	-20	-23	-23	19	14	1	7	9	1	0	12
18000	-38	-31	0	-18	-21	-38	-41	-41	35	28	-1	16	18	2	0	17
EGLIN AFB	FORT HUachuCA															
5000	-7	-5	-1	-2	-4	-10	-11	-11	6	4	1	2	3	-2	-3	1224 N.M.I.
10000	-19	-14	0	-4	-10	-18	-20	-20	19	13	0	4	8	1	0	12
18000	-36	-30	-1	-17	-21	-35	-38	-38	33	28	0	15	18	4	1	17
EGLIN AFB	FORT KNICK															
5000	2	1	1	0	1	-6	-8	-8	-4	-2	-1	0	-2	-10	-11	13
10000	1	0	1	0	0	-7	-9	-9	-7	-4	-2	-2	-4	-13	-15	14
18000	0	-3	-2	0	-2	-13	-16	-16	-17	-7	1	-5	-6	-19	-23	20

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

STATION IN FEET		EQUIVALENT HEADWINDS										STANDARD DEVIATION									
		DIRECT					REFLECTION					RETURN					JAN APR JUL OCT				
		JAN	APR	JUL	OCT	SEASO	APR	SEASO	APR	SEASO	APR	JAN	APR	JUL	OCT	SEASO	APR	SEASO	APR	SEASO	APR
EGLIN AFB																					
5000	TO	2	1	1	0	0	-7	-8	-4	-2	-1	0	-2	-10	-12	13	13	250	4 MI.	13	13
10000	TO	0	0	1	0	0	-8	-10	-4	-3	-1	0	-2	-11	-13	14	14	9	11	14	14
18000	TO	-4	-7	-4	-2	-5	-16	-19	-12	-3	3	-2	-3	-15	-19	20	19	11	18	20	19
EGLIN AFB																					
5000	TO	7	7	3	4	5	-2	-3	-8	-7	-3	-4	-6	-13	-15	12	12	252	N.M.I.	12	12
10000	TO	13	15	3	5	7	3	-1	-19	-16	-3	-5	-10	-20	-23	13	13	8	11	13	13
18000	TO	35	28	4	16	19	5	3	-37	-33	-3	-18	-21	-37	-41	18	18	10	16	18	18
EGLIN AFB																					
5000	TO	-4	-1	-3	-1	-3	-9	-11	3	1	3	1	2	-4	-5	11	10	435	N.M.I.	11	10
10000	TO	3	3	-2	0	0	-6	-7	-5	-4	3	0	-1	-9	-11	12	11	7	9	12	11
18000	TO	11	13	0	4	5	-3	-5	-18	-17	0	-6	-9	-21	-24	16	15	8	13	16	15
FGLIN AFB																					
5000	TO	-6	-4	-2	-4	-4	-9	-11	5	4	2	4	3	-1	-2	8	8	1811	N.M.I.	8	8
10000	TO	-18	-11	-5	-10	-11	-18	-20	16	13	5	9	9	3	2	9	9	5	7	9	9
18000	TO	-33	-23	-13	-22	-22	-33	-35	26	18	11	18	17	8	6	14	13	9	13	14	13
EGLIN AFB																					
5000	TO	-6	-5	-1	-3	-4	-12	-14	4	4	1	3	2	-4	-6	13	13	389	N.M.I.	13	13
10000	TO	-16	-12	-1	-7	-9	-18	-21	12	9	1	6	6	-1	-3	13	13	8	11	13	13
18000	TO	-31	-24	-5	-16	-18	-33	-37	19	14	4	12	12	1	0	19	19	9	13	19	19
EGLIN AFB																					
5000	TO	5	3	2	1	2	-4	-6	-7	-4	-2	-2	-4	-11	-13	12	12	577	N.M.I.	12	12
10000	TO	6	4	3	3	3	-4	-6	-13	-8	-3	-4	-7	-16	-18	13	13	8	11	13	13
18000	TO	10	3	1	5	4	-6	-9	-27	-14	-2	-12	-13	-27	-31	19	19	9	13	19	19
EGLIN AFB																					
5000	TO	9	6	5	5	6	0	-1	-10	-7	-5	-6	-7	-14	-15	11	10	1311	N.M.I.	11	10
10000	TO	16	11	7	9	10	3	1	-21	-15	-9	-11	-14	-22	-24	12	12	7	9	12	12
18000	TO	27	15	9	14	14	5	3	-39	-23	-12	-24	-23	-37	-40	17	16	8	11	17	16
EGLIN AFB																					
5000	TO	-6	-4	-1	-2	-4	-9	-10	5	4	1	1	2	-2	-3	9	8	1324	N.M.I.	9	8
10000	TO	-14	-14	-1	-7	-10	-18	-20	17	13	1	7	9	1	0	10	9	6	8	10	9
18000	TO	-34	-29	-3	-17	-21	-35	-38	32	27	3	15	18	6	3	15	14	7	9	15	14
EGLIN AFB																					
5000	TO	10	7	4	4	6	0	-2	-11	-9	-4	-4	-7	-14	-16	11	11	817	N.M.I.	11	11
10000	TO	14	14	7	7	10	3	1	-22	-17	-7	-8	-13	-23	-25	13	13	9	10	13	13
18000	TO	30	13	7	17	16	5	2	-40	-26	-8	-22	-23	-38	-42	18	18	10	17	18	18

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--REFLECTS ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*MINUS SIGN REFLECTS HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION	
	DIRECT						RETURN							
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC		
EGLEN AFB	MEMPHIS													325 N.M.I.
5000	-3	-3	0	-2	-2	-10	2	2	0	2	1	-6	-8	13 13
10000	-11	-9	0	-5	-6	-15	7	5	0	3	3	-4	-7	14 14
18000	-23	-21	-6	-12	-14	-28	9	12	6	8	8	-2	-5	20 19
EGLEN AFB	MEXICO CITY													953 N.M.I.
5000	-4	-6	-1	0	-3	-9	4	5	1	0	2	-2	-4	9 9
10000	-9	-7	0	-2	-5	-11	8	7	0	2	3	-1	-3	9 9
18000	-22	-17	3	-3	-10	-22	19	14	-3	7	8	-1	-3	13 12
EGLEN AFB	MINN-ST PAUL													920 N.M.I.
5000	-4	-3	-1	-3	-3	-10	2	2	0	2	1	-5	-7	12 11
10000	-10	-7	-3	-6	-7	-15	4	4	2	3	3	-4	-6	12 13
18000	-21	-15	-8	-14	-14	-26	3	6	5	6	5	-5	-7	18 18
EGLEN AFB	WINNET AFB													1263 N.M.I.
5000	-8	-5	-2	-5	-5	-12	6	3	2	5	3	-2	-3	10 10
10000	-15	-10	-5	-9	-10	-17	11	7	4	7	7	0	-1	11 11
18000	-27	-19	-11	-19	-19	-33	14	12	9	12	11	2	0	16 16
EGLEN AFB	MELLIS AFB													1464 N.M.I.
5000	-5	-4	-1	-1	-3	-8	4	3	1	1	2	-2	-3	8 8
10000	-18	-13	-3	-8	-10	-20	16	13	3	7	9	2	1	10 9
18000	-35	-29	-7	-18	-21	-38	31	25	6	16	18	7	5	15 14
EGLEN AFB	NEW CUMBERLAND													751 N.M.I.
5000	9	6	4	4	5	-1	-10	-7	-4	-4	-6	-14	-15	12 11
10000	15	12	6	6	9	1	-20	-15	-6	-7	-12	-21	-24	13 13
18000	26	14	6	15	13	3	-38	-23	-7	-20	-21	-36	-40	18 18
EGLEN AFB	NEW ORLEANS													186 N.M.I.
5000	-10	-8	-3	-4	-6	-14	9	7	3	4	5	-1	-3	12 12
10000	-20	-16	-2	-6	-11	-24	19	15	2	6	9	0	-1	13 14
18000	-39	-30	0	-18	-21	-41	36	28	0	16	18	3	0	19 18
EGLEN AFB	NIAGARA FALLS													839 N.M.I.
5000	5	3	2	3	3	-3	-8	-5	-3	-4	-5	-12	-14	12 11
10000	10	7	4	5	6	-1	-16	-11	-5	-6	-10	-18	-20	13 13
18000	14	6	3	9	7	-3	-31	-17	-6	-17	-17	-31	-34	18 18
EGLEN AFB	OKMARC AFB													1659 N.M.I.
5000	-5	-4	-1	-1	-3	-8	4	4	1	0	2	-2	-3	8 7
10000	-17	-13	-2	-7	-10	-17	15	12	2	6	8	2	0	9 8
18000	-35	-28	-5	-17	-21	-37	31	26	5	15	18	7	5	14 13

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND MEASUREMENTS												STANDARD DEVIATION	
	DIRECT						RETURN							
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC		
FLIN AFR	TO													
SCCO	2	4	1	3	2	-5	-3	-5	0	-3	-3	-10	-12	337 N.M.I.
10000	13	11	1	3	6	-3	-14	-12	-1	-4	-7	-16	-19	11 11 9 10
18000	28	24	3	12	14	1	-32	-27	-2	-14	-18	-33	-36	13 12 8 11
FLIN AFR	TO													
SCCO	6	4	3	3	3	-4	-8	-5	-3	-3	-5	-12	-14	675 N.M.I.
10000	11	8	4	4	4	-3	-16	-11	-5	-6	-10	-18	-20	12 12 8 10
18000	16	9	3	13	4	-4	-32	-18	-5	-16	-16	-31	-35	13 13 9 12
FLIN AFR	TO													
SCCO	-8	-5	-2	-6	-6	-14	6	3	2	5	3	-2	-3	1447 N.M.I.
10000	-16	-10	-6	-10	-11	-20	12	8	5	8	8	1	0	10 10 8 10
18000	-27	-19	-12	-23	-19	-32	15	12	9	14	12	3	1	15 15 9 14
FLIN AFR	TO													
SCCO	-2	-2	0	-2	-2	-11	0	0	0	1	0	-7	-8	513 N.M.I.
10000	-8	-5	0	-4	-5	-14	2	3	0	2	1	-6	-8	13 12 8 11
18000	-17	-15	-5	-10	-11	-24	0	5	5	4	3	-7	-10	13 14 10 13
FLIN AFR	TO													
SCCO	3	2	1	1	1	-7	-5	-3	-2	-2	-3	-10	-12	748 N.M.I.
10000	4	3	2	2	2	-5	-11	-7	-3	-4	-6	-15	-17	12 12 8 10
18000	5	0	0	3	1	-9	-23	-11	-2	-11	-11	-24	-28	13 13 9 12
FLIN AFR	TO													
SCCO	11	8	4	3	6	-1	-11	-8	-4	-3	-7	-14	-16	371 N.M.I.
10000	19	15	5	5	10	1	-21	-16	-5	-6	-12	-22	-24	12 12 8 11
18000	12	23	4	16	16	4	-38	-28	-4	-19	-21	-37	-41	13 13 9 13
FLIN AFR	TO													
SCCO	13	7	4	4	6	-2	-11	-9	-7	-5	-7	-14	-16	973 N.M.I.
10000	17	14	7	7	10	2	-22	-17	-8	-9	-14	-23	-25	11 11 8 10
18000	29	17	8	17	16	5	-40	-25	-10	-23	-23	-38	-42	13 13 8 11
FLIN AFR	TO													
SCCO	2	1	1	1	1	-7	-4	-2	-1	-2	-3	-10	-11	852 N.M.I.
10000	2	1	1	1	1	-6	-9	-5	-2	-4	-5	-13	-16	12 11 3 10
18000	5	-1	0	1	7	-11	-20	-9	-2	-4	-9	-22	-25	13 13 9 12
FLIN AFR	TO													
SCCO	-5	-4	-2	-4	-4	-10	4	3	2	3	2	-1	-3	1845 N.M.I.
10000	-18	-11	-4	-13	-11	-20	14	10	4	9	9	3	2	8 8 6 7
18000	-33	-23	-13	-22	-22	-33	26	19	11	18	17	9	7	9 9 7 8
														14 13 8 13

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

+--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*PLUS SIG. DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN Pounds	EQUIVALENT HEADWIND IN D.S.										STANDARD DEVIATION			
	INTERCITY					RETURN					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85
EISELSON AFB	TO	ELLSWORTH AFB										1871 N.M.I.		
SCOO	2	1	0	4	1	-3	-4	-3	-1	0	-5	-3	-8	-9
LOCOD	11	5	6	8	7	2	0	-13	-6	-6	-9	-9	-14	-16
18C00	18	8	8	13	11	3	1	-22	-11	-10	-17	-15	-23	-25
EISELSON AFB	TO	ELMENDORF AFB										217 N.M.I.		
SCOO	0	-4	-5	-5	-4	-11	-13	-1	4	5	5	3	-4	-6
LOCOD	-2	-6	-5	-7	-6	-15	-17	1	5	5	6	4	-4	-7
18C00	-6	-10	-7	-11	-9	-22	-25	1	8	5	9	5	-6	-9
EISELSON AFB	TO	FORT LEWIS										1320 N.M.I.		
SCOO	-3	-4	-1	-2	-3	-8	-10	2	3	1	2	1	-3	-4
LOCOD	3	0	2	-1	0	-6	-9	-5	0	-2	1	-2	-9	-10
18C00	10	0	4	2	3	-6	-8	-16	-4	-7	-8	-9	-19	-22
EISELSON AFB	TO	FORT ORD										1905 N.M.I.		
SCOO	-2	-3	0	-3	-2	-7	-9	1	3	0	2	1	-3	-4
LOCOD	2	0	1	-3	0	-6	-8	-5	-1	-2	0	-2	-8	-10
18C00	8	0	5	0	3	-6	-8	-16	-6	-7	-7	-9	-18	-21
EISELSON AFB	TO	FOUNTAIN										1917 N.M.I.		
SCOO	2	1	0	4	1	-3	-4	-3	-1	0	-5	-3	-8	-9
LOCOD	4	5	4	7	5	0	0	-4	-6	-5	-7	-6	-11	-12
18C00	7	9	8	11	3	1	0	-9	-11	-9	-12	-11	-18	-19
EISELSON AFB	TO	HILL AFB										1853 N.M.I.		
SCOO	-2	-2	0	0	-1	-6	-7	1	1	0	0	0	-4	-5
LOCOD	6	2	2	0	2	-3	-4	-9	-3	-3	-2	-4	-10	-12
18C00	13	4	4	7	6	-1	-3	-19	-8	-7	-12	-12	-21	-23
EISELSON AFB	TO	JUNEAU										514 N.M.I.		
SCOO	-4	-3	-3	-2	-3	-10	-11	4	3	4	2	3	-3	-4
LOCOD	2	-3	0	-5	-2	-10	-12	-4	2	-1	4	0	-8	-10
18C00	9	-2	2	0	1	-9	-12	-13	-1	-4	-4	-6	-17	-20
EISELSON AFB	TO	KODIAK										443 N.M.I.		
SCOO	2	-4	-5	-5	-4	-11	-13	-3	4	6	5	3	-4	-6
LOCOD	-3	-6	-6	-8	-6	-15	-18	1	5	5	7	4	-4	-6
18C00	-9	-10	-7	-13	-10	-23	-26	2	8	5	10	6	-6	-9
EISELSON AFB	TO	LAPSON AFB										1380 N.M.I.		
SCOO	-2	-3	-1	-1	-2	-7	-9	1	2	1	0	1	-4	-5
LOCOD	4	0	2	-1	0	-5	-7	-7	-2	-3	0	-3	-10	-11
18C00	11	1	4	4	4	-4	-7	-17	-6	-7	-10	-10	-20	-23

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN POUNDS	EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES												STANDARD DEVIATION					
	DIRECTION																	
	JAN	APR	JUL	OCT	00450	075	085	JAN	APR	JUL	OCT	00450		075	085			
EISENHORN AFB	3	1	0	0	2	-2	-4	-4	-2	0	-7	-4	-9	-10	1750 N.M.I.			
5000	12	5	7	9	3	2	1	-13	-6	-7	-10	-9	-15	-17	6	7	7	8
10000	19	9	9	15	12	4	2	-22	-12	-11	-18	-16	-24	-26	9	8	7	8
EISENHORN AFB	2	2	5	1	1	4	-6	-3	-2	-5	-3	-4	-11	-13	337 N.M.I.			
5000	-2	4	3	5	2	-5	-8	1	-4	-4	-5	-4	-12	-14	15	10	10	11
10000	-5	4	2	3	1	-10	-12	1	-6	-3	-6	-4	-15	-18	14	12	11	11
EISENHORN AFB	2	1	0	0	1	1	-5	-3	-1	0	-6	-3	-8	-10	1506 N.M.I.			
5000	11	7	4	3	7	1	0	-12	-5	-7	-9	-9	-14	-16	9	8	7	8
10000	18	9	7	15	12	4	2	-21	-11	-10	-17	-15	-24	-26	9	8	7	8
EISENHORN AFB	-1	-2	-6	-9	-4	-10	-12	0	2	9	3	3	-3	-5	11	9	8	9
5000	-4	-4	-7	-8	-7	-15	-17	6	2	7	6	5	-2	-4	13	11	10	11
10000	-15	-9	-10	-12	-12	-22	-25	10	6	8	9	8	-1	-4	17	15	13	15
EISENHORN AFB	0	0	1	0	0	-5	-7	0	0	-2	0	-1	-6	-7	1558 N.M.I.			
5000	-1	2	3	2	1	-4	-5	0	-3	-3	-3	-3	-8	-9	8	8	7	8
10000	-1	4	4	4	2	-4	-6	-1	-5	-6	-6	-5	-12	-14	8	8	8	8
EISENHORN AFB	-3	-3	-1	-2	-3	-8	-9	2	3	1	1	1	-3	-4	1388 N.M.I.			
5000	3	0	2	-2	0	-5	-7	-6	-1	-3	0	-3	-9	-11	9	8	6	8
10000	10	0	4	3	4	-5	-7	-16	-5	-7	-9	-9	-19	-22	11	9	8	9
EISENHORN AFB	1	2	-1	7	1	-4	-6	-1	-2	1	-8	-3	-9	-11	871 N.M.I.			
5000	7	5	6	4	4	0	-1	-8	-5	-6	-6	-7	-13	-15	10	9	8	10
10000	14	9	9	12	10	2	0	-16	-11	-10	-14	-13	-22	-24	11	9	9	9
EISENHORN AFB	-4	0	2	-3	-1	-8	-10	2	0	-2	2	0	-7	-8	987 N.M.I.			
5000	-10	-6	-1	-6	-6	-14	-16	6	3	0	5	3	-3	-5	11	11	8	10
10000	-21	-14	-4	-14	-13	-24	-27	8	6	2	8	5	-4	-6	11	11	9	11
EISENHORN AFB	-3	-2	0	1	-1	-6	-7	2	1	0	-1	0	-4	-5	1176 N.M.I.			
5000	-15	-11	0	-5	-8	-15	-17	14	11	0	5	7	0	-1	8	8	5	7
10000	-33	-27	-2	-14	-18	-32	-35	29	24	2	12	15	4	1	10	9	7	9

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	7	5	3	6	-1	-2	-11	-8	-5	-4	-7	-15	-16
10000	17	12	5	6	9	1	0	-20	-14	-5	-7	-11	-21	-23
18000	28	18	1	12	12	0	-1	-37	-25	-2	-16	-19	-35	-39
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	1	3	5	0	2	-5	-7	-3	-4	-5	0	-4	-11	-13
10000	0	0	2	0	0	-7	-9	-5	-4	-2	0	-3	-11	-13
18000	-4	-3	1	-4	-2	-13	-16	-12	-6	-2	-1	-5	-16	-19
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-1	0	1	0	0	-5	-6	0	0	-1	0	-1	-5	-6
10000	-14	-8	-2	-7	-3	-14	-16	12	7	2	6	6	0	0
18000	-29	-20	-9	-14	-19	-29	-32	22	15	6	15	13	4	2
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-3	-2	0	0	-1	-6	-7	3	2	0	0	0	-4	-5
10000	-14	-11	-1	-6	-8	-15	-17	13	10	1	5	6	0	0
18000	-32	-25	-5	-15	-13	-31	-34	27	22	4	13	14	4	2
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	7	3	4	5	-1	-2	-10	-8	-3	-4	-6	-14	-16
10000	20	15	2	6	9	1	0	-20	-16	-2	-7	-11	-21	-23
18000	36	29	-1	16	18	2	0	-38	-30	1	-17	-21	-37	-41
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-1	0	4	-1	0	-7	-9	0	-1	-4	1	-1	-9	-11
10000	-8	-5	2	-3	-3	-12	-14	4	2	-2	2	0	-6	-8
18000	-20	-14	2	-11	-10	-24	-28	7	8	-2	7	3	-6	-9
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-2	0	4	-2	0	-8	-10	1	0	-4	1	-1	-8	-10
10000	-10	-6	3	-4	-4	-13	-15	6	4	-2	3	2	-5	-7
18000	-24	-19	3	-12	-12	-27	-31	12	12	-3	9	5	-5	-8
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	6	4	5	2	4	-2	-4	-7	-9	-5	-3	-6	-13	-14
10000	9	6	4	4	5	-2	-3	-14	-9	-4	-5	-8	-16	-19
18000	12	7	1	4	5	-4	-7	-27	-16	-3	-11	-13	-27	-30
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-1	0	3	0	0	-5	-6	0	-1	-3	0	-2	-7	-8
10000	-11	-5	-1	-5	-8	-14	-16	11	7	0	6	5	0	-2
18000	-29	-22	-5	-17	-17	-30	-33	21	17	9	14	12	2	0

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.*							STANDARD DEVIATION			
	JAN	APR	JUL	UCT	**A50	A75	A85	JAN	APR	JUL	UCT
ELLINGTON AFB											
5000	0	2	-1	0	0	-5	-7	-1	-3	1	0
10000	10	9	-1	3	4	-2	-3	-11	-9	1	-4
18000	24	23	-2	10	12	0	-1	-27	-25	2	-11
ELLINGTON AFB											
5000	10	8	4	4	6	0	-1	-11	-8	-3	-4
10000	20	16	3	6	13	2	0	-21	-17	-3	-7
18000	34	28	0	16	19	4	1	-39	-31	-1	-18
ELLINGTON AFB											
5000	11	8	5	4	6	0	-2	-12	-9	-5	-4
10000	20	15	4	6	13	1	0	-21	-16	-4	-7
18000	33	23	0	14	15	1	-1	-38	-28	0	-17
ELLINGTON AFB											
5000	8	7	3	4	5	-1	-2	-9	-7	-2	-4
10000	19	15	2	6	9	1	0	-19	-15	-2	-6
18000	35	28	0	16	18	4	1	-37	-30	0	-17
ELLINGTON AFB											
5000	0	1	-2	0	-1	-7	-8	0	-1	2	0
10000	8	7	-2	3	3	-3	-4	-9	-8	2	-3
18000	21	21	-3	9	11	0	-2	-25	-23	3	-10
ELLINGTON AFB											
5000	-1	0	1	0	0	-5	-6	0	0	-1	0
10000	-14	-8	-2	-7	-9	-14	-16	12	7	2	6
18000	-28	-20	-8	-18	-18	-29	-32	21	14	6	14
ELLINGTON AFB											
5000	7	4	5	2	5	-2	-4	-9	-7	-6	-2
10000	11	9	4	3	6	-1	-3	-14	-11	-4	-4
18000	16	10	-3	5	5	-6	-8	-27	-18	3	-9
ELLINGTON AFB											
5000	10	7	5	4	6	0	-2	-11	-8	-5	-4
10000	18	13	6	7	10	2	0	-21	-15	-6	-8
18000	29	18	3	13	14	2	0	-39	-25	-4	-18
ELLINGTON AFB											
5000	10	7	6	6	7	1	0	-12	-8	-6	-7
10000	20	13	9	10	12	5	3	-23	-15	-9	-12
18000	32	18	9	19	18	8	5	-41	-26	-13	-25

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION					
	DIRECT				RETURN													
	JAN	APR	JUL	DEC	**A50	A75	A85	JAN	APR	JUL	DEC	**A50	A75	A85	JAN	APR	JUL	DEC
ELLINGTON AFB																		
5000	-3	-1	1	0	0	-6	-8	2	1	-1	0	0	-5	-7	10	9	6	8
10000	-16	-11	0	-5	-8	-16	-18	14	11	0	5	6	0	-2	11	9	7	10
18000	-33	-27	-1	-15	-18	-33	-36	29	24	0	13	15	2	0	17	15	9	14
ELLINGTON AFB																		
5000	12	9	5	5	7	1	0	-13	-9	-5	-5	-8	-15	-17	11	10	7	9
10000	22	16	7	8	12	4	3	-25	-18	-7	-9	-15	-24	-26	11	11	8	11
18000	37	24	6	19	19	7	5	-44	-29	-8	-23	-25	-40	-44	16	16	9	15
ELLINGTON AFB																		
5000	9	7	6	3	6	-1	-3	-10	-8	-4	-3	-7	-15	-17	13	12	8	11
10000	16	12	4	5	8	0	-1	-18	-13	-4	-6	-10	-20	-22	13	13	9	13
18000	25	16	-2	9	9	-7	-5	-34	-23	1	-13	-16	-32	-36	19	18	10	17
ELLINGTON AFB																		
5000	-7	-9	-4	-1	-6	-12	-13	6	9	4	0	4	-1	-2	10	9	6	9
10000	-7	-6	-1	-2	-4	-13	-12	7	4	1	2	3	-1	-3	9	9	7	8
18000	-16	-11	0	-5	-7	-17	-19	12	7	0	4	4	-3	-4	14	12	7	11
ELLINGTON AFB																		
5000	0	1	4	0	1	-5	-7	-2	-3	-4	0	-3	-10	-11	12	11	8	10
10000	0	0	1	0	0	-7	-9	-5	-3	-2	-1	-3	-11	-13	12	12	9	11
18000	-3	-2	0	-4	-2	-13	-15	-12	-7	-1	-3	-5	-16	-19	18	17	10	16
ELLINGTON AFB																		
5000	-4	-1	1	-3	-2	-9	-10	2	0	-2	2	0	-6	-8	10	11	8	10
10000	-9	-5	-1	-6	-5	-13	-15	4	2	0	4	2	-4	-6	11	11	8	11
18000	-17	-11	-4	-12	-11	-21	-24	3	3	1	5	2	-6	-9	17	16	10	15
ELLINGTON AFB																		
5000	-2	-1	2	1	0	-5	-6	1	0	-2	-1	-1	-6	-7	5	6	5	8
10000	-15	-11	-1	-6	-9	-15	-18	13	10	0	5	6	0	-1	10	9	7	9
18000	-32	-26	-4	-15	-18	-32	-35	27	22	3	13	14	3	1	17	15	9	14
ELLINGTON AFB																		
5000	11	9	5	5	6	0	0	-13	-9	-5	-5	-8	-15	-17	11	10	7	9
10000	21	15	7	8	12	4	2	-24	-17	-7	-9	-14	-23	-26	11	12	8	11
18000	35	22	5	19	18	6	3	-43	-28	-7	-22	-24	-39	-43	17	16	9	16
ELLINGTON AFB																		
5000	9	7	3	3	5	-2	-3	-10	-7	-3	-4	-6	-14	-16	12	12	8	11
10000	19	14	0	6	9	0	-2	-19	-15	0	-6	-10	-20	-23	12	13	9	12
18000	35	28	-4	15	17	1	-1	-37	-30	3	-16	-20	-36	-40	18	17	10	16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION			
	DIRECT					REVERSE					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85
FILLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	7	5	5	6	0	-1	-11	-8	-5	-5	-7	-14	-16
10000	18	12	7	8	10	3	1	-22	-15	-7	-9	-13	-22	-24
18000	28	16	5	14	14	3	1	-39	-24	-8	-20	-22	-36	-40
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-3	-2	0	1	-1	-6	-7	2	1	0	-1	0	-4	-6
10000	-14	-11	0	-5	-8	-15	-17	13	11	0	5	6	0	-1
18000	-32	-26	-3	-14	-18	-31	-34	28	24	2	12	14	3	1
FILLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	5	5	1	3	3	-2	-4	-5	-6	-1	-3	-4	-10	-12
10000	15	12	1	5	7	0	-1	-16	-13	0	-5	-8	-17	-19
18000	31	26	0	14	16	3	0	-33	-29	0	-15	-19	-33	-36
FILLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	8	5	5	6	0	-1	-12	-9	-5	-5	-8	-15	-16
10000	19	14	4	7	10	3	1	-23	-16	-7	-9	-13	-22	-25
18000	31	19	4	15	15	4	1	-40	-26	-6	-20	-22	-37	-41
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-4	-1	1	-4	-2	-9	-10	3	0	-1	3	0	-5	-7
10000	-11	-6	-2	-7	-7	-14	-15	7	4	1	5	4	-2	-4
18000	-20	-13	-5	-14	-12	-23	-26	7	5	2	8	5	-3	-5
FILLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	7	6	5	2	4	-2	-4	-8	-7	-5	-3	-6	-13	-15
10000	11	8	4	3	5	-1	-3	-15	-10	-4	-5	-9	-17	-19
18000	15	9	0	5	5	-4	-7	-29	-18	0	-11	-13	-28	-32
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	8	6	5	4	5	-1	-2	-10	-7	-7	-5	-7	-14	-16
10000	15	10	6	6	8	1	0	-19	-13	-6	-8	-12	-20	-22
18000	23	14	3	11	11	0	-1	-35	-22	-6	-17	-19	-33	-37
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	11	8	5	4	6	0	-1	-12	-9	-4	-4	-7	-14	-16
10000	21	16	4	7	11	2	1	-22	-17	-4	-7	-12	-22	-24
18000	37	27	1	17	19	5	2	-40	-31	-2	-19	-23	-38	-42
ELLINGTON AFB	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	12	8	6	6	7	1	0	-13	-9	-6	-6	-9	-15	-17
10000	22	16	6	9	13	5	3	-25	-18	-9	-10	-15	-24	-26
18000	36	22	7	19	19	7	5	-43	-29	-10	-24	-25	-40	-43

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION				
	DIRECT					RETURN					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	***A50	A75	A85	JAN	APR	JUL	OCT	***A50	A75	A85	
ELLINGTON AFB	TO														
5000	7	5	5	4	5	-1	-3	-9	-6	-5	-4	-6	-13	-15	1053 N.M.I.
10000	12	9	5	6	7	3	-1	-17	-11	-6	-8	-11	-19	-21	12 11 8 9
18000	18	10	3	9	8	-1	-3	-32	-19	-6	-15	-17	-30	-34	12 12 9 11
ELLINGTON AFB	TO														
5000	-1	0	1	0	0	-5	-6	0	0	-1	0	-1	-5	-6	1560 N.M.I.
10000	-14	-8	-2	-7	-3	-14	-16	12	7	2	6	6	0	0	8 7 5 7
18000	-28	-20	-8	-18	-18	-29	-32	21	15	6	15	13	4	2	9 8 7 8
ELLSWORTH AFB	TO														
5000	-3	0	0	-4	-2	-7	-8	2	0	0	3	1	-3	-4	1895 N.M.I.
10000	-13	-6	-6	-9	-9	-15	-16	11	5	5	8	7	1	0	8 7 6 7
18000	-23	-12	-11	-19	-14	-25	-27	19	9	8	14	12	3	1	9 8 7 8
ELLSWORTH AFB	TO														
5000	-3	-4	-3	-1	-3	-8	-9	3	4	3	1	2	-1	-2	951 N.M.I.
10000	-8	-5	-7	-6	-7	-13	-15	6	4	7	6	5	0	-2	7 7 5 7
18000	-21	-17	-16	-14	-17	-28	-30	12	12	15	10	12	2	0	11 10 8 9
ELLSWORTH AFB	TO														
5000	4	2	0	4	2	-4	-6	-6	-3	0	-5	-4	-11	-13	949 N.M.I.
10000	10	6	2	7	6	-1	-3	-14	-8	-3	-9	-9	-17	-19	11 11 8 10
18000	14	10	7	12	10	3	-2	-26	-19	-9	-17	-17	-29	-32	12 11 9 11
ELLSWORTH AFB	TO														
5000	9	5	3	6	5	-1	-2	-10	-7	-3	-6	-7	-14	-15	1122 N.M.I.
10000	16	11	6	10	10	3	1	-19	-13	-7	-11	-13	-21	-23	11 11 8 9
18000	24	18	12	18	17	7	4	-34	-24	-13	-23	-23	-35	-38	11 12 9 11
ELLSWORTH AFB	TO														
5000	-2	-5	-6	-5	-5	-11	-12	1	5	6	5	4	-1	-2	796 N.M.I.
10000	-2	-2	-4	-1	-3	-10	-11	0	1	3	0	0	-6	-7	9 7 7 8
18000	-9	-8	-8	-4	-8	-18	-21	-3	0	5	-1	0	-10	-13	12 10 9 10
ELLSWORTH AFB	TO														
5000	11	8	5	7	7	1	0	-13	-8	-5	-8	-9	-16	-17	1247 N.M.I.
10000	22	14	10	11	13	6	4	-24	-16	-10	-13	-16	-24	-26	11 10 8 9
18000	32	23	16	22	22	12	9	-40	-28	-13	-27	-27	-40	-43	11 12 9 11
ELLSWORTH AFB	TO														
5000	10	6	4	7	6	0	-2	-11	-7	-4	-8	-8	-16	-17	859 N.M.I.
10000	19	12	9	12	12	4	2	-21	-14	-9	-14	-15	-23	-26	12 12 9 11
18000	29	19	15	22	20	9	6	-36	-25	-17	-26	-25	-38	-42	12 13 10 12

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	**450	A75	A85	JAN	APR	JUL	OCT	**450	A75	A85		
ELLSWORTH AFB	TO															
5000	0	-4	-5	-4	-4	-10	-12	0	3	5	3	2	-4	-6	10	375 N.M.I.
10000	-1	0	-3	0	-2	-10	-11	-2	-1	3	-1	0	-9	-11	13	9 10
18000	-6	-6	-8	-4	-7	-19	-22	-6	0	4	-3	-1	-14	-17	22	10 12
ELLSWORTH AFB	TO															
5000	12	8	6	3	8	1	0	-13	-9	-6	-9	-10	-17	-18	11	1250 N.M.I.
10000	24	15	13	13	16	8	6	-26	-17	-13	-14	-18	-26	-28	11	8 10
18000	37	25	20	25	25	15	13	-43	-29	-21	-29	-30	-42	-45	17	9 11
ELLSWORTH AFB	TO															
5000	2	0	-3	2	0	-7	-9	-3	0	3	-2	-1	-8	-10	11	861 N.M.I.
10000	5	2	0	4	2	-4	-6	-9	-5	0	-6	-5	-13	-15	12	11 10
18000	4	4	1	7	4	-5	-8	-19	-12	-4	-13	-11	-23	-26	19	9 11
ELLSWORTH AFB	TO															
5000	-2	-5	-5	-3	-4	-9	-10	2	5	5	3	3	-1	-2	8	863 N.M.I.
10000	-4	-4	-5	-4	-5	-11	-13	2	3	5	3	3	-3	-4	11	6 7
18000	-14	-12	-12	-8	-12	-22	-25	3	5	10	3	5	-5	-8	19	8 10
ELLSWORTH AFB	TO															
5000	11	7	5	8	7	0	-1	-12	-8	-5	-9	-9	-17	-18	12	874 N.M.I.
10000	21	13	10	13	14	5	3	-23	-14	-11	-14	-16	-24	-27	12	9 11
18000	32	21	17	24	22	11	9	-18	-26	-19	-28	-27	-40	-43	19	10 12
ELLSWORTH AFB	TO															
5000	10	5	3	7	6	-1	-3	-10	-6	-3	-8	-7	-15	-17	12	489 N.M.I.
10000	17	10	8	12	11	2	0	-19	-11	-9	-14	-14	-23	-25	13	10 12
18000	26	16	14	20	18	6	3	-33	-21	-16	-25	-23	-37	-40	21	11 13
ELLSWORTH AFB	TO															
5000	-8	-5	-3	-6	-6	-12	-13	-10	-6	-3	-8	-7	-15	-17	12	822 N.M.I.
10000	-20	-11	-9	-13	-13	-21	-23	-19	-11	-9	-14	-14	-23	-25	13	10 12
18000	-31	-21	-20	-27	-25	-37	-40	-33	-21	-16	-25	-23	-37	-40	21	11 13
ELLSWORTH AFB	TO															
5000	-4	-4	-2	-3	-4	-3	-10	8	5	3	5	5	0	-2	10	975 N.M.I.
10000	-12	-7	-8	-8	-9	-16	-17	10	10	9	13	12	5	3	11	7 9
18000	-25	-19	-18	-19	-20	-31	-34	28	18	19	24	22	10	8	18	8 10
ELLSWORTH AFB	TO															
5000	7	5	3	5	4	-1	-3	-9	-6	-3	-6	-6	-13	-15	11	1162 N.M.I.
10000	15	10	5	9	9	2	0	-14	-12	-4	-11	-12	-20	-22	11	8 9
18000	22	17	10	15	15	5	3	-32	-23	-12	-21	-21	-33	-36	17	10 15

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
+PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT	00A50	A75	A85
ELLSWORTH AFR														
5000	4	0	-2	3	0	-6	-8	-5	-1	1	-4	-2	-10	-12
10000	7	4	1	6	4	-3	-5	-11	-6	-2	-8	-7	-15	-18
18000	9	5	3	8	5	-5	-7	-21	-13	-6	-15	-13	-26	-29
ELLSWORTH AFR														
5000	3	0	-3	2	0	-7	-9	-4	0	2	-3	-1	-9	-11
10000	6	3	0	5	3	-4	-6	-10	-5	-1	-7	-6	-14	-16
18000	7	4	2	7	4	-5	-8	-20	-12	-5	-13	-12	-24	-27
ELLSWORTH AFR														
5000	3	1	4	5	3	-3	-4	-4	-1	-5	-6	-5	-11	-12
10000	5	2	5	5	4	-1	-3	-7	-3	-6	-7	-6	-12	-14
18000	7	4	5	7	4	-1	-3	-14	-9	-11	-13	-12	-21	-23
ELLSWORTH AFR														
5000	12	4	7	9	8	0	-1	-13	-7	-6	-10	-9	-18	-20
10000	22	12	14	15	15	4	4	-23	-13	-14	-16	-17	-26	-28
18000	34	22	23	26	25	14	11	-38	-26	-24	-26	-29	-42	-45
ELLSWORTH AFR														
5000	-5	-5	-4	-5	-5	-11	-13	5	5	4	5	4	-1	-2
10000	-13	-7	-9	-10	-10	-13	-14	11	6	9	9	8	1	0
18000	-24	-19	-20	-21	-22	-34	-37	18	15	13	16	17	5	2
ELLSWORTH AFR														
5000	4	3	1	3	2	-2	-4	-4	-4	-1	-4	-4	-10	-11
10000	12	3	3	6	6	0	0	-15	-10	-4	-8	-9	-16	-18
18000	19	16	7	13	12	4	2	-29	-22	-9	-18	-19	-30	-32
ELLSWORTH AFR														
5000	9	6	4	6	6	0	-1	-11	-7	-4	-7	-7	-14	-16
10000	18	12	7	10	11	4	2	-21	-14	-8	-11	-14	-22	-24
18000	26	20	12	19	18	8	6	-36	-26	-14	-23	-24	-36	-39
ELLSWORTH AFR														
5000	9	4	4	6	6	0	-2	-11	-7	-4	-7	-8	-15	-16
10000	17	11	7	11	11	3	1	-20	-13	-8	-12	-13	-22	-24
18000	26	18	13	19	18	7	5	-35	-24	-15	-24	-24	-36	-40
ELLSWORTH AFR														
5000	9	5	3	5	5	-1	-2	-9	-6	-3	-6	-6	-13	-14
10000	16	11	6	9	10	3	1	-19	-13	-4	-10	-12	-20	-22
18000	24	18	11	17	16	7	5	-34	-25	-12	-22	-22	-34	-38

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

00A—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
+MINUS SIGN DENOTES HEADWINDS.

COMPARISON OF HEADINGS AND STANDARD DEVIATION IN DEGREES FOR GREAT CIRCLE AIR ROUTES

ROUTE	MONTHS												STANDARD DEVIATION
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
ALL ROUTES	10	10	10	10	10	10	10	10	10	10	10	10	10
5000	10	10	10	10	10	10	10	10	10	10	10	10	10
10000	10	10	10	10	10	10	10	10	10	10	10	10	10
15000	10	10	10	10	10	10	10	10	10	10	10	10	10
20000	10	10	10	10	10	10	10	10	10	10	10	10	10
25000	10	10	10	10	10	10	10	10	10	10	10	10	10
30000	10	10	10	10	10	10	10	10	10	10	10	10	10
35000	10	10	10	10	10	10	10	10	10	10	10	10	10
40000	10	10	10	10	10	10	10	10	10	10	10	10	10
45000	10	10	10	10	10	10	10	10	10	10	10	10	10
50000	10	10	10	10	10	10	10	10	10	10	10	10	10
55000	10	10	10	10	10	10	10	10	10	10	10	10	10
60000	10	10	10	10	10	10	10	10	10	10	10	10	10
65000	10	10	10	10	10	10	10	10	10	10	10	10	10
70000	10	10	10	10	10	10	10	10	10	10	10	10	10
75000	10	10	10	10	10	10	10	10	10	10	10	10	10
80000	10	10	10	10	10	10	10	10	10	10	10	10	10
85000	10	10	10	10	10	10	10	10	10	10	10	10	10
90000	10	10	10	10	10	10	10	10	10	10	10	10	10
95000	10	10	10	10	10	10	10	10	10	10	10	10	10
100000	10	10	10	10	10	10	10	10	10	10	10	10	10

HEADINGS—COMPUTED FOR A 120-KT AIRSPEED.
STANDARD DEVIATIONS—ACTUAL FOUR-VALUE HEADINGS FOR INDICATED PER CENT OF LIABILITIES.
THUS SIGN NEGATIVE HEADINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GPFAV CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION				
	DIRECTION																
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	
FLLSMITH AFB																	
5000	TO	0	-2	3	0	0	-8	-5	-1	1	-4	-2	-10	-12	11	647 M.M.I.	
10000	TO	4	1	6	4	-3	-5	-11	-6	-2	-8	-7	-15	-18	13	9 11	
18000	TO	9	3	8	4	-4	-7	-21	-13	-6	-15	-13	-26	-29	20	19 11 18	
FLLSMITH AFB																	
5000	TO	0	-3	2	0	-7	-9	-4	0	2	-3	-1	-9	-11	11	759 M.M.I.	
10000	TO	3	0	5	3	-4	-6	-10	-5	-1	-7	-6	-14	-16	12	9 10	
18000	TO	7	4	7	4	-5	-8	-20	-12	-5	-13	-12	-24	-27	19	12 9 12 11 17	
FLLSMITH AFB																	
5000	TO	1	4	5	3	-3	-4	-4	-1	-5	-6	-5	-11	-12	9	1621 M.M.I.	
10000	TO	5	2	5	4	-1	-3	-7	-3	-6	-7	-6	-17	-14	4	9 9 10	
18000	TO	7	4	7	4	-1	-3	-14	-4	-11	-13	-12	-21	-23	13	9 8 9 13 10 13	
FLLSMITH AFB																	
5000	TO	12	7	15	15	0	-1	-13	-7	-6	-10	-9	-18	-20	12	668 M.M.I.	
10000	TO	22	17	26	25	16	11	-21	-14	-14	-16	-17	-26	-24	13	10 12	
18000	TO	44	22	23	26	16	11	-38	-26	-24	-27	-24	-47	-44	20	14 11 13 19	
FLLSMITH AFB																	
5000	TO	-5	-9	-5	-5	-11	-13	7	3	4	3	4	-1	-2	7	648 M.M.I.	
10000	TO	-13	-7	-9	-10	-14	-14	11	6	4	9	8	1	3	12	7 9 11	
18000	TO	-24	-13	-20	-21	-22	-14	14	15	10	16	17	5	5	21	19 13 19	
FLLSMITH AFB																	
5000	TO	3	1	3	2	-2	-4	-4	-4	-1	-4	-4	-10	-11	7	1598 M.M.I.	
10000	TO	12	3	3	6	3	0	-15	-10	-4	-8	-9	-16	-12	10	9 8 8	
18000	TO	19	16	7	13	12	4	-29	-22	-9	-18	-19	-30	-32	14	7 9 13	
FLLSMITH AFB																	
5000	TO	9	4	6	6	0	-1	-11	-7	-4	-7	-7	-14	-16	10	1280 M.M.I.	
10000	TO	17	11	7	13	11	4	-21	-14	-8	-11	-14	-22	-24	11	10 7 9	
18000	TO	26	18	12	19	18	6	-36	-26	-14	-23	-24	-36	-39	16	11 8 11 15	
FLLSMITH AFB																	
5000	TO	4	4	6	6	3	-2	-11	-7	-4	-7	-8	-15	-16	11	906 M.M.I.	
10000	TO	17	11	7	13	11	3	-20	-13	-8	-12	-13	-22	-24	12	11 8 10	
18000	TO	26	18	13	19	18	7	-35	-24	-15	-24	-24	-36	-40	16	12 9 12 11 17	
FLLSMITH AFB																	
5000	TO	5	3	5	5	-1	-2	-9	-6	-3	-6	-6	-13	-14	10	1329 M.M.I.	
10000	TO	16	11	6	9	13	1	-19	-13	-4	-10	-12	-20	-22	11	10 7 9	
18000	TO	24	18	11	17	16	7	-34	-25	-12	-22	-22	-34	-38	16	11 8 10 15	

* HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

** DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

STANDARD DEVIATION

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 **A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT AFFILIARITIES.
 *VUS SIG. DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. DIRECTION										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	***A50	A75	AB5	JAN	APR	JUL	OCT	***A50	A75	AB5
ELLSWORTH AFB	MEMPHIS										839 N.M.I.			
5000	8	5	3	6	5	-1	-3	-10	-6	-3	-7	-7	-14	-16
10000	16	10	6	11	10	2	0	-19	-12	-7	-12	-13	-21	-23
18000	23	16	12	18	16	5	3	-33	-22	-14	-23	-22	-35	-38
ELLSWORTH AFB	AFRICO CITY										1536 N.M.I.			
5000	-3	-6	-7	-1	-5	-10	-11	2	5	7	1	3	-1	-2
10000	-1	-1	-2	0	-1	-7	-8	-1	0	2	-1	0	-5	-7
18000	-3	-2	-2	0	-2	-9	-11	-7	-4	1	-4	-3	-11	-14
ELLSWORTH AFB	MINN-ST PAUL										420 N.M.I.			
5000	11	5	5	8	7	0	-3	-12	-6	-6	-9	-9	-17	-19
10000	20	10	14	15	14	5	3	-21	-11	-14	-16	-15	-25	-27
18000	31	21	24	26	25	13	9	-35	-24	-25	-29	-28	-41	-44
ELLSWORTH AFB	MINOT AFB										220 N.M.I.			
5000	0	0	2	0	0	-3	-10	-2	0	-2	0	-1	-10	-12
10000	-2	-2	3	0	0	-9	-11	-2	0	-4	-1	-2	-11	-13
18000	-2	0	6	-1	0	-12	-15	-8	-5	-11	-7	-9	-21	-24
ELLSWORTH AFB	NEILLS AFB										747 N.M.I.			
5000	-3	-4	-3	-2	-4	-3	-10	3	4	3	2	3	-1	-3
10000	-9	-4	-7	-7	-8	-14	-15	7	5	7	6	6	0	-1
18000	-21	-17	-17	-15	-18	-29	-32	13	12	15	10	13	1	-1
ELLSWORTH AFB	NEW CUMBERLAND										1188 N.M.I.			
5000	13	9	7	9	9	2	0	-14	-8	-7	-9	-10	-17	-19
10000	24	15	14	14	16	8	6	-26	-16	-14	-16	-18	-26	-28
18000	37	24	22	26	26	15	13	-42	-28	-23	-30	-30	-42	-46
ELLSWORTH AFB	NEW ORLEANS										1081 N.M.I.			
5000	5	2	0	4	2	-4	-5	-6	-4	-1	-5	-4	-11	-13
10000	11	7	2	7	6	0	-2	-14	-9	-3	-9	-9	-17	-19
18000	15	12	9	12	11	1	0	-27	-19	-9	-18	-18	-29	-32
ELLSWORTH AFB	NIAGARA FALLS										1044 N.M.I.			
5000	12	6	7	9	3	1	0	-13	-7	-7	-10	-10	-17	-19
10000	23	13	15	16	16	8	6	-24	-15	-15	-17	-18	-27	-29
18000	36	23	24	26	26	15	13	-40	-27	-25	-30	-30	-42	-45
ELLSWORTH AFB	ONAFD AFB										971 N.M.I.			
5000	-3	-4	-2	-1	-3	-7	-9	3	4	3	1	2	-1	-2
10000	-9	-6	-7	-7	-9	-14	-16	7	5	7	6	6	0	-1
18000	-22	-17	-16	-15	-13	-24	-31	14	13	15	11	13	3	0

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

+ PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS										STANDARD DEVIATION			
	DIRECT					RETURN					JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	**45	A75	A85	JAN	APR	JUL	OCT	**450	A75	A85
ELLSWORTH AFR	TO													
5000	6	5	2	5	4	-1	-2	-8	-6	-3	-5	-6	-12	-13
10000	14	10	5	8	8	2	0	-17	-12	-5	-9	-11	-18	-20
18000	22	18	9	15	15	6	4	-32	-24	-11	-20	-21	-33	-36
ELL SWORTH AFR	TO													
5000	12	7	6	9	8	1	0	-13	-8	-7	-9	-10	-17	-19
10000	23	14	14	15	16	8	6	-25	-16	-14	-16	-18	-26	-28
18000	36	24	22	26	26	16	13	-41	-28	-23	-30	-30	-42	-46
ELL SWORTH AFR	TO													
5000	-4	-3	0	-4	-3	-12	-14	2	2	0	2	1	-6	-8
10000	-12	-7	-3	-9	-8	-16	-19	9	5	2	6	5	-2	-4
18000	-19	-10	-6	-15	-12	-25	-29	9	5	0	7	4	-7	-10
ELL SWORTH AFR	TO													
5000	11	6	4	8	7	0	-2	-12	-7	-5	-8	-8	-16	-18
10000	20	12	9	13	13	4	2	-21	-13	-10	-14	-15	-24	-26
18000	30	19	16	23	21	9	6	-36	-24	-19	-27	-26	-39	-42
ELL SWORTH AFR	TO													
5000	12	8	7	9	8	1	0	-13	-7	-7	-10	-10	-17	-19
10000	23	13	14	16	16	8	6	-24	-14	-15	-17	-18	-26	-28
18000	35	23	23	26	26	15	12	-39	-26	-24	-30	-29	-42	-45
ELL SWORTH AFR	TO													
5000	11	7	5	7	7	0	0	-12	-8	-5	-7	-8	-15	-17
10000	20	13	9	11	12	5	3	-23	-15	-9	-12	-15	-23	-25
18000	30	21	14	21	20	10	8	-38	-27	-16	-25	-26	-38	-41
ELL SWORTH AFR	TO													
5000	13	7	8	9	9	2	0	-14	-8	-8	-10	-10	-17	-19
10000	24	14	15	16	17	9	7	-25	-16	-15	-17	-19	-26	-28
18000	36	24	24	26	27	16	14	-41	-28	-25	-30	-31	-42	-45
ELL SWORTH AFR	TO													
5000	12	5	7	9	8	0	-1	-13	-6	-7	-10	-9	-17	-19
10000	22	12	15	16	16	8	6	-23	-13	-15	-17	-17	-26	-28
18000	34	22	24	26	26	14	12	-38	-25	-25	-29	-29	-41	-44
ELL SWORTH AFR	TO													
5000	-8	-5	-3	-6	-6	-12	-13	8	5	3	6	5	0	-2
10000	-20	-11	-9	-14	-14	-21	-23	19	10	9	13	12	5	3
18000	-32	-21	-21	-27	-25	-37	-40	28	18	19	24	21	10	7

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

+PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.										STANDARD DEVIATION			
	DIRECT					RETURN					JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	***A50	A75	A85	JAN	APR	JUL	OCT	***A50	A75	A85
ELLSWORTH AFB	TO													
5000	-4	-2	0	-6	-3	-10	-12	3	1	0	4	1	-4	-6
10000	-13	-4	-6	-11	-9	-15	-18	11	6	6	9	7	1	0
18000	-21	-11	-9	-15	-14	-24	-26	15	7	6	11	9	0	-1
FLMENDORF AFB	TO													
5000	-2	-3	0	-3	-2	-8	-10	0	3	0	2	1	-4	-5
10000	4	0	3	-1	1	-6	-7	-7	-2	-4	-1	-4	-11	-13
18000	12	2	7	6	5	-4	-6	-19	-8	-10	-12	-12	-23	-26
FLMENDORF AFB	TO													
5000	-1	-3	0	-2	-2	-7	-9	0	2	0	1	0	-4	-5
10000	4	0	2	-1	0	-5	-7	-8	-2	-3	-1	-4	-11	-12
18000	11	2	7	3	5	-3	-6	-19	-9	-10	-10	-12	-22	-24
FLMENDORF AFB	TO													
5000	-1	-2	0	-1	-1	-6	-7	0	1	0	0	0	-4	-5
10000	7	2	3	1	3	-2	-3	-10	-4	-4	-3	-5	-11	-13
18000	15	6	7	7	3	0	-2	-21	-10	-9	-15	-14	-23	-26
FLMENDORF AFB	TO													
5000	-4	-3	-2	-2	-3	-10	-11	3	3	2	1	2	-4	-5
10000	4	-1	2	0	0	-7	-9	-6	0	-2	0	-2	-11	-13
18000	12	3	5	5	6	-5	-8	-17	-6	-7	-10	-10	-23	-26
FLMENDORF AFB	TO													
5000	-5	-5	-6	-6	-4	-12	-14	-5	5	6	6	3	-5	-7
10000	-4	-6	-6	-9	-7	-17	-19	2	5	5	8	5	-4	-7
18000	-9	-11	-3	-14	-11	-25	-28	3	8	6	11	7	-6	-10
FLMENDORF AFB	TO													
5000	-1	-3	0	-2	-2	-7	-9	0	2	0	1	0	-4	-5
10000	6	1	3	0	2	-4	-6	-8	-2	-4	-1	-4	-11	-13
18000	14	4	7	3	8	-2	-4	-20	-8	-9	-14	-13	-24	-26
FLMENDORF AFB	TO													
5000	3	1	0	5	2	-2	-4	-4	-1	0	-6	-3	-8	-10
10000	12	5	6	7	7	2	0	-13	-6	-7	-11	-10	-15	-17
18000	20	10	9	15	13	4	2	-23	-13	-11	-19	-17	-25	-28
FLMENDORF AFB	TO													
5000	-1	-2	0	-2	-1	-5	-7	0	2	0	2	0	-3	-5
10000	5	1	2	0	1	-4	-5	-8	-3	-3	-2	-4	-10	-12
18000	13	4	6	5	7	-1	-3	-20	-10	-9	-12	-13	-22	-24

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DEFINES ANNUAL EQUIVALENT HEADWINDS AND INDICATED PER CENT AFFILIATIES.

*PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION			
	DIRECT						RETURN									
	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT
ELMENDORF AFB	TO	TO	PRUDHOM BAY													
5000	0	3	5	4	3	-5	-1	-3	-5	-4	-4	-11	-12	12	9	541 N.M.I.
10000	-1	5	4	5	3	-6	0	-5	-5	-6	-5	-13	-14	14	11	9 10
18000	-2	6	3	5	3	-8	-1	-8	-5	-8	-6	-17	-20	19	16	11 11 11 15
ELMENDORF AFB	TO	TO	REGINA													
5000	2	0	0	4	1	-3	-4	-1	0	-5	-3	-8	-10	9	7	1613 N.M.I.
10000	11	5	6	9	7	1	-13	-6	-6	-10	-9	-15	-16	10	8	7 8
18000	19	9	9	15	12	4	-22	-12	-10	-18	-16	-24	-27	14	12	10 12
ELMENDORF AFB	TO	TO	SWENNA													
5000	-2	-3	-7	-6	-5	-12	1	2	7	4	3	-3	-5	11	10	1265 N.M.I.
10000	-10	-4	-7	-9	-3	-16	8	3	6	7	6	-2	-4	13	12	9 10 12
18000	-17	-13	-12	-14	-14	-25	12	7	9	10	9	-1	-4	18	16	14 14 16
ELMENDORF AFB	TO	TO	THULE													
5000	0	0	2	0	0	-6	0	0	-2	0	-1	-6	-7	8	7	1772 N.M.I.
10000	0	3	3	3	2	-3	0	-3	-4	-3	-3	-8	-9	8	8	7 7 8
18000	0	4	4	5	3	-4	-2	-6	-6	-7	-6	-13	-15	12	11	10 10 10
ELMENDORF AFB	TO	TO	VAKIMA													
5000	-1	-3	0	-2	-2	-9	0	2	0	1	0	-4	-6	10	8	1339 N.M.I.
10000	5	0	3	0	1	-5	-8	-2	-4	-1	-4	-11	-13	12	10	9 10 8
18000	13	3	7	7	7	-3	-19	-8	-10	-13	-13	-23	-26	18	15	13 13 15
ELMENDORF AFB	TO	TO	VELLUMKNIFE													
5000	1	2	0	7	2	-4	-1	-2	0	-7	-3	-9	-11	10	8	990 N.M.I.
10000	7	4	5	7	5	0	-8	-5	-6	-7	-7	-13	-15	11	9	8 9 9
18000	14	10	9	13	11	2	-16	-12	-10	-15	-14	-23	-25	16	13	11 13
EL TOLSON	TO	TO	ENGLAND AFB													
5000	3	3	1	0	1	-4	-4	-3	-1	0	-2	-7	-8	8	8	1279 N.M.I.
10000	15	12	2	6	8	1	-16	-13	-2	-6	-9	-17	-19	10	9	5 7 7
18000	30	25	4	14	16	5	-34	-28	-5	-14	-20	-33	-36	16	14	8 13
EL TOLSON	TO	TO	FORT HENNING													
5000	5	5	3	1	3	-1	-6	-5	-3	-1	-4	-9	-10	8	8	1645 N.M.I.
10000	17	14	4	7	9	3	-18	-15	-4	-8	-11	-18	-20	9	9	5 7 8
18000	33	27	7	16	19	8	-37	-30	-8	-18	-22	-35	-38	15	13	8 12
FL TOLSON	TO	TO	FORT ALISS													
5000	0	0	0	-4	-1	-7	0	0	0	4	0	-4	-5	8	7	583 N.M.I.
10000	12	10	2	4	6	0	-13	-10	-1	-4	-7	-15	-17	12	10	5 7 7
18000	27	23	4	11	14	3	-30	-25	-4	-13	-17	-31	-35	20	17	10 10 15

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT				RETURN													
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
EL TORO	MCAS	TO	FORT BRAGG/POPE															
5000	8	6	4	2	4	0	-1	-8	-7	-4	-3	-6	-11	-12	8	8	5	7
10000	19	15	6	8	11	5	3	-21	-16	-6	-9	-13	-20	-22	9	9	6	8
18000	35	27	11	18	21	11	9	-39	-30	-11	-21	-24	-37	-40	14	13	8	12
EL TORO	MCAS	TO	FORT CAMPBELL															
5000	6	6	4	2	4	0	-1	-7	-6	-4	-2	-5	-10	-12	8	8	6	7
10000	17	13	6	9	10	4	3	-18	-14	-6	-9	-12	-19	-21	10	9	7	9
18000	32	25	12	17	19	10	8	-37	-29	-12	-20	-23	-36	-39	16	14	8	13
EL TORO	MCAS	TO	FORT CARSON															
5000	7	3	2	-2	1	-3	-4	-2	-3	-2	2	-2	-6	-7	7	7	5	6
10000	9	8	6	7	7	0	0	-10	-9	-6	-7	-8	-15	-17	12	10	8	10
18000	22	19	14	12	16	5	2	-28	-23	-15	-15	-20	-32	-35	20	18	11	16
EL TORO	MCAS	TO	FORT EUSTIS															
5000	8	7	5	4	5	1	0	-9	-8	-5	-4	-7	-12	-13	8	8	5	7
10000	19	15	8	10	12	6	5	-21	-16	-8	-11	-14	-21	-23	9	9	7	8
18000	35	26	14	19	22	13	11	-40	-29	-15	-23	-26	-38	-40	14	13	8	13
EL TORO	MCAS	TO	FORT HOOD															
5000	2	2	0	-1	0	-4	-5	-3	-2	0	1	-1	-6	-7	9	8	5	7
10000	14	11	1	5	7	0	-1	-15	-12	-1	-6	-8	-16	-18	11	9	7	9
18000	29	24	3	13	15	4	2	-33	-27	-4	-15	-19	-33	-36	17	15	9	14
EL TORO	MCAS	TC	FORT HUACHUCA															
5000	0	0	0	-3	-1	-6	-7	0	0	0	3	0	-4	-5	9	8	5	7
10000	11	9	1	4	5	-1	-3	-12	-10	-1	-4	-7	-15	-17	13	11	8	11
18000	25	21	3	10	13	1	-1	-29	-24	-3	-11	-15	-30	-34	21	18	11	16
FL TORO	MCAS	TO	FORT KNCK															
5000	7	6	4	2	4	0	-1	-7	-6	-4	-3	-5	-10	-12	8	8	6	7
10000	17	13	7	9	11	4	3	-19	-14	-7	-10	-13	-19	-21	10	9	7	9
18000	32	25	13	18	20	11	9	-37	-28	-13	-21	-23	-36	-39	16	14	8	13
EL TORO	MCAS	TO	FORT LEAVENWORTH															
5000	4	5	4	1	3	-1	-2	-4	-5	-4	-1	-4	-9	-10	8	8	6	7
10000	13	10	7	8	9	2	1	-15	-11	-7	-9	-11	-18	-19	11	10	8	9
19000	27	22	14	16	18	9	6	-32	-25	-15	-19	-22	-34	-37	18	16	10	15
EL TORO	MCAS	TO	FORT LEWIS															
5000	0	0	-2	0	0	-5	-7	0	0	2	0	0	-5	-6	9	8	6	7
10000	-7	-4	0	-1	-3	-11	-13	4	2	-1	0	0	-6	-8	13	12	8	11
18000	-16	-9	-1	-7	-8	-20	-23	6	3	-1	1	1	-9	-12	20	18	12	17

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85		
EL TORO	MCAS	TO	FORT ORD										5	6	2	2
5000	-5	-5	-2	-1	-4	-9	-11	10	10	1	4	5	-2	-3	10	9
10000	-11	-10	0	-5	-6	-16	-18	19	14	4	8	10	-2	-4	15	14
18000	-25	-18	-6	-11	-14	-28	-32							-5	23	20
268 N.MI.																
EL TOFO	MCAS	TO	FORT RUCKER										-6	-5	-2	-1
5000	5	4	2	1	2	-1	-3	-18	-14	-3	-7	-10	-18	-19	8	8
10000	16	13	3	7	9	3	1	-36	-29	-6	-17	-21	-34	-37	9	8
18000	32	26	5	15	18	7	5								14	13
1635 N.MI.																
EL TORO	MCAS	TO	FORT SILL										-3	-3	-2	0
5000	3	3	2	0	1	-3	-4	-15	-13	-4	-7	-10	-17	-19	9	8
10000	14	12	4	7	8	2	0	-33	-28	-10	-14	-21	-34	-37	11	10
18000	30	25	9	14	18	7	4								18	16
960 N.MI.																
EL TOFO	MCAS	TO	FORT WOLTERS										-3	-3	0	1
5000	2	2	1	-1	0	-4	-5	-15	-12	-2	-6	-9	-16	-18	9	8
10000	14	12	3	6	8	1	0	-33	-27	-7	-16	-20	-33	-36	11	9
18000	30	25	6	14	17	6	4								17	15
987 N.MI.																
EL TOPO	MCAS	TO	GEN MITCHELL										-6	-5	-5	-3
5000	5	5	5	3	4	0	-1	-16	-11	-9	-10	-12	-18	-20	8	8
10000	14	10	9	9	10	4	3	-33	-24	-17	-21	-23	-34	-37	10	9
18000	26	20	16	17	19	10	8								16	15
1499 N.MI.																
EL TORO	MCAS	TO	HILL AFB										-3	-3	-2	0
5000	3	3	2	0	1	-2	-3	-4	-3	-6	-4	-5	-12	-14	8	7
10000	2	2	6	3	3	-3	-5	-15	-13	-13	-9	-13	-25	-28	13	11
18000	6	7	12	5	8	-4	-7								22	19
524 N.MI.																
EL TOFO	MCAS	TO	HOMESTEAD AFB										-2	-2	0	0
5000	2	2	0	0	0	-3	-4	-14	-11	0	-5	-7	-14	-16	7	7
10000	13	10	0	4	6	0	-1	-31	-26	-1	-13	-18	-30	-32	8	7
18000	27	24	0	12	15	3	1								12	11
1998 N.MI.																
EL TOFO	MCAS	TO	HUNTER AAF										-7	-6	-3	-2
5000	6	5	3	1	3	0	-2	-19	-15	-4	-8	-11	-19	-20	8	7
10000	18	14	4	7	10	3	2	-37	-30	-8	-18	-22	-35	-38	9	8
18000	33	27	7	16	19	8	6								14	13
1838 N.MI.																
EL TORO	MCAS	TO	HUNTSVILLE										-6	-6	-4	-2
5000	6	5	4	1	3	-1	-2	-19	-15	-5	-9	-12	-19	-21	8	6
10000	17	14	5	8	10	4	2	-37	-30	-10	-19	-23	-36	-39	10	9
18000	33	27	9	17	19	9	7								15	14
1532 N.MI.																

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWIND IN D.S.												STANDARD DEVIATION			
		DIRECT						RETURN									
		JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
EL TOPO	MCAS	TO	JACKSONVILLE												1836 N.M.I.		
5000	5	2	1	3	-1	-2		-6	-5	-2	-1			8	7	5	7
10000	17	13	3	9	3	1		-18	-14	-3	-7			9	8	6	8
18000	32	26	5	15	18	5		-36	-29	-6	-17			14	12	7	12
EL TOPO	MCAS	TO	JUNEAU												1633 N.M.I.		
5000	0	-1	1	0	-4	-5		-1	-2	1	-1			9	7	5	7
10000	-7	-1	0	-3	-10	-11		3	2	1	-1			11	10	7	9
18000	-17	-8	-6	-9	-10	-23		8	2	3	2			16	15	11	14
EL TOPO	MCAS	TO	KEY WEST												1951 N.M.I.		
5000	1	-1	0	0	-4	-5		-2	-1	1	1			7	7	4	6
10000	11	9	0	4	5	-1		-12	-10	1	-4			8	7	5	7
18000	25	23	0	11	14	0		-29	-25	0	-12			12	11	6	10
EL TOPO	MCAS	TO	LARSEN AFB												815 N.M.I.		
5000	1	-1	0	0	-5	-6		-2	-1	1	0			9	8	5	7
10000	-5	-2	2	0	-1	-11		2	1	-2	-1			13	12	8	11
18000	-12	-6	1	-4	-5	-17		2	0	-4	0			20	18	12	17
EL TOPO	MCAS	TO	LITTLE ROCK												1267 N.M.I.		
5000	4	3	1	2	-2	-3		-5	-5	-3	-1			9	8	6	7
10000	16	13	5	8	10	3		-17	-14	-5	-8			10	9	7	9
18000	32	26	10	16	19	7		-36	-29	-10	-18			17	15	9	14
EL TOPO	MCAS	TO	LCCRBURNE												1702 N.M.I.		
5000	7	5	3	5	0	-1		-8	-7	-5	-4			8	8	6	7
10000	17	13	8	10	11	5		-19	-14	-8	-11			10	9	7	9
18000	32	24	15	19	21	12		-38	-28	-16	-22			15	14	8	13
EL TOPO	MCAS	TO	LUKE AFB												268 N.M.I.		
5000	2	3	2	-3	0	-6		-2	-2	-1	4			9	8	6	8
10000	10	10	3	5	-1	-2		-11	-10	-3	-5			14	12	8	11
18000	26	22	8	11	15	0		-29	-25	-8	-13			22	19	12	17
EL TOPO	MCAS	TO	MEMPHIS												1373 N.M.I.		
5000	5	4	1	3	-1	-2		-6	-5	-3	-1			9	8	6	7
10000	17	14	5	8	10	4		-18	-14	-5	-9			10	9	7	9
18000	32	26	10	16	19	7		-36	-29	-10	-19			16	15	9	14
EL TOPO	MCAS	TO	MEXICO CITY												1310 N.M.I.		
5000	-5	-7	-4	-3	-5	-10		5	7	5	3			7	6	4	6
10000	4	3	-3	-1	0	-6		-6	-4	4	1			8	7	6	7
18000	13	11	-5	1	3	-6		-18	-15	4	-3			13	11	7	10

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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*MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN -NUTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	F C U L L I V A L E N T H E A D W I N D S * DIRECTION												STANDARD DEVIATION					
	JAN APR JUL OCT				**A50 A75 A85				RETURN JAN APR JUL OCT				JAN APR JUL OCT					
	MCAS	TO			MINN-ST PAUL											1315 N.M.I.		
EL TORO	5000	3	4	4	1	3	-1	-3	-4	-4	-2	-4	-9	-10	8	8	6	7
	10000	10	7	8	8	8	2	0	-12	-8	-9	-9	-10	-18	10	9	8	9
	18000	20	17	16	14	16	7	5	-27	-21	-17	-19	-21	-31	17	15	10	14
EL TORO	5000	4	3	3	1	2	-2	-3	-5	-3	-3	-2	-4	-9	8	8	6	7
	10000	5	3	7	5	5	0	-2	-7	-4	-7	-6	-7	-12	10	9	7	9
	18000	9	9	14	8	10	0	-2	-18	-14	-16	-13	-16	-25	17	16	10	15
EL TORO	5000	3	2	3	-3	1	-4	-6	-3	-2	-3	4	-1	-7	10	8	6	8
	10000	2	3	5	4	3	-4	-4	-4	-4	-5	-4	-5	-13	15	13	9	12
	18000	11	12	12	7	10	-1	-5	-19	-17	-12	-10	-14	-27	23	21	13	18
EL TORO	5000	8	7	5	4	5	1	0	-9	-7	-5	-5	-7	-12	8	8	5	7
	10000	19	14	9	10	12	6	5	-21	-15	-10	-11	-14	-21	9	9	7	8
	18000	34	24	16	20	22	13	11	-40	-28	-17	-24	-26	-38	14	14	8	13
FL TORO	5000	4	3	0	0	1	-3	-4	-4	-3	0	0	-2	-7	8	8	5	7
	10000	15	12	1	6	8	1	0	-16	-12	-1	-6	-9	-16	9	8	6	8
	18000	30	25	2	14	16	5	2	-34	-28	-3	-16	-20	-33	15	13	8	12
EL TORO	5000	7	6	5	4	5	0	0	-8	-6	-5	-5	-6	-11	8	8	6	7
	10000	16	11	10	11	11	6	4	-19	-13	-10	-12	-14	-20	9	9	7	8
	18000	30	22	17	19	21	12	10	-36	-26	-18	-23	-25	-35	15	14	8	13
EL TORO	5000	4	4	1	1	2	-1	-2	-5	-4	-1	-1	-3	-8	7	7	5	6
	10000	15	12	1	6	8	1	0	-16	-13	-1	-6	-9	-16	8	8	6	8
	18000	30	26	3	14	17	6	4	-34	-28	-3	-16	-20	-33	13	12	7	11
EL TORO	5000	7	6	5	4	5	0	0	-8	-7	-5	-4	-6	-11	8	8	6	7
	10000	18	13	9	10	12	6	4	-20	-14	-9	-11	-14	-20	10	9	7	9
	18000	32	24	16	19	21	13	11	-39	-27	-17	-23	-25	-37	15	14	8	13
EL TORO	5000	5	3	3	2	3	-1	-2	-6	-3	-2	-2	-4	-9	8	7	6	7
	10000	2	2	5	3	3	-2	-4	-5	-3	-4	-4	-5	-11	10	9	7	9
	18000	3	5	11	4	6	-4	-6	-13	-11	-14	-10	-13	-22	17	16	11	15

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN										STANDARD DEVIATION							
	DIRECT					RETURN												
	JAN	APR	JUL	OCT	••450	A75	A85	JAN	APR	JUL	OCT	••450	A75	A85	JAN	APR	JUL	OCT
EL TORD	MCAS	TO	SCOTT AFB										1371 N.M.I.					
5000	6	5	4	2	4	0	-2	-6	-6	-4	-2	-5	-10	-11	8	8	6	7
10000	15	12	7	9	10	4	2	-17	-13	-7	-10	-12	-19	-20	10	9	7	9
18000	30	24	13	17	19	10	8	-35	-27	-14	-20	-23	-35	-38	16	15	9	14
EL TORD	MCAS	TO	SELFIDGE AFB										1718 N.M.I.					
5000	6	6	5	3	4	0	-1	-7	-6	-5	-4	-6	-11	-12	8	8	6	7
10000	16	11	9	10	11	5	3	-18	-12	-9	-11	-13	-19	-21	10	9	7	9
18000	29	21	17	18	20	12	9	-35	-25	-18	-22	-24	-35	-37	15	14	9	13
EL TORD	MCAS	TO	SHAW AFB										1846 N.M.I.					
5000	7	6	4	2	4	0	-1	-8	-7	-4	-2	-6	-11	-12	8	8	5	7
10000	19	15	5	8	11	4	3	-20	-16	-5	-9	-12	-20	-22	5	9	6	8
18000	34	27	9	17	20	10	8	-39	-30	-10	-20	-24	-37	-40	14	13	8	12
EL TORD	MCAS	TO	WURTSMITH										1712 N.M.I.					
5000	6	5	5	3	4	0	-1	-7	-5	-5	-4	-6	-11	-12	8	8	6	7
10000	14	10	9	10	10	4	3	-16	-11	-10	-11	-12	-18	-20	10	9	7	9
18000	26	20	17	17	19	10	8	-33	-24	-18	-22	-24	-34	-37	15	14	9	14
EL TORD	MCAS	TO	YAKIMA										784 N.M.I.					
5000	1	0	-1	0	0	-5	-6	-1	0	2	0	0	-5	-6	9	8	6	7
10000	-6	-3	1	0	-2	-10	-12	3	1	-1	-1	0	-7	-9	13	12	8	11
18000	-13	-7	0	-5	-6	-18	-21	3	1	-3	0	0	-11	-14	20	19	12	18
EL TORD	MCAS	TO	YELLOWKNIFE										1732 N.M.I.					
5000	3	2	0	1	1	-3	-4	-3	-2	0	-2	-2	-7	-8	7	7	5	7
10000	-4	-1	0	0	-1	-7	-8	1	0	-1	-1	0	-6	-7	9	8	6	8
18000	-9	-2	1	-3	-3	-12	-14	0	-2	-4	-2	-3	-11	-13	14	13	10	13
ENGLAND	AFB	TO	FORT BENNING										396 N.M.I.					
5000	11	8	4	4	6	0	-2	-11	-9	-4	-4	-7	-15	-17	12	12	8	11
10000	22	16	4	7	11	2	0	-22	-17	-4	-8	-13	-23	-25	13	13	9	13
18000	38	29	1	18	20	4	1	-41	-31	-2	-20	-23	-40	-44	19	18	10	17
ENGLAND	AFB	TO	FORT BLISS										707 N.M.I.					
5000	-8	-5	-2	-3	-5	-12	-13	7	4	1	3	3	-3	-4	11	11	7	10
10000	-19	-14	0	-7	-10	-19	-21	18	14	0	6	9	0	-1	11	10	8	11
18000	-37	-30	0	-17	-20	-36	-40	34	28	0	15	17	3	1	18	16	9	15
ENGLAND	AFB	TO	FORT BRAGG/POPE										720 N.M.I.					
5000	12	9	5	4	7	0	-1	-13	-10	-5	-4	-8	-16	-17	11	11	8	10
10000	23	18	5	7	12	3	1	-24	-19	-5	-8	-14	-24	-26	12	12	8	12
18000	40	28	4	19	21	7	4	-43	-32	-5	-21	-24	-41	-45	18	17	10	17

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION			
	DIRECT					RETURN					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	0000	A75	A85	JAN	APR	JUL	OCT	0000	A75	A85
ENGLAND AFR	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	9	7	5	3	5	-1	-3	-11	-8	-4	-3	-7	-15	-17
10000	14	11	5	5	8	0	-2	-20	-13	-5	-7	-11	-21	-24
18000	26	15	0	10	10	-1	-4	-36	-23	-1	-15	-17	-34	-38
ENGLAND AFR	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-5	-3	0	-4	-3	-10	-12	4	2	0	3	2	-4	-6
10000	-17	-12	-2	-8	-10	-19	-21	15	10	2	7	8	0	-1
18000	-33	-26	-7	-19	-20	-34	-38	25	20	6	16	15	4	2
ENGLAND AFR	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	12	9	5	5	7	0	0	-13	-10	-5	-5	-8	-15	-17
10000	23	17	7	4	11	4	2	-25	-19	-7	-9	-15	-24	-27
18000	39	27	6	19	20	7	4	-44	-31	-4	-23	-25	-41	-45
ENGLAND AFR	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-10	-7	-4	-4	-6	-14	-16	9	7	4	4	5	-1	-3
10000	-21	-16	-1	-7	-11	-21	-24	20	15	1	7	10	1	-1
18000	-38	-31	2	-19	-21	-39	-42	34	29	-2	14	18	2	-1
ENGLAND AFR	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-6	-4	-1	-1	-3	-4	-11	5	4	1	1	2	-3	-4
10000	-17	-14	0	-6	-9	-19	-20	17	13	0	5	8	0	-1
18000	-36	-29	-1	-15	-23	-35	-38	33	27	1	14	17	4	1
ENGLAND AFR	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	9	7	4	3	5	-2	-4	-11	-8	-4	-4	-7	-15	-17
10000	17	11	5	6	9	0	-1	-20	-14	-5	-7	-11	-21	-24
18000	27	16	2	11	12	0	-2	-37	-24	-3	-17	-19	-35	-39
ENGLAND AFR	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-1	0	1	-1	0	-9	-10	0	-1	-2	1	-1	-9	-10
10000	-6	-4	0	-3	-3	-12	-14	0	1	0	2	0	-7	-9
18000	-15	-12	-5	-10	-10	-22	-25	-2	1	3	3	1	-10	-13
ENGLAND AFR	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-3	-2	0	-2	-2	-7	-8	2	1	0	1	0	-3	-4
10000	-16	-10	-4	-9	-10	-16	-18	14	9	4	8	8	2	1
18000	-31	-22	-12	-21	-21	-32	-34	24	17	10	17	16	7	5
ENGLAND AFR	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-4	-3	0	0	-2	-7	-8	3	3	0	0	1	-3	-4
10000	-16	-12	-3	-7	-9	-16	-18	14	11	3	7	8	2	0
18000	-33	-27	-8	-17	-20	-33	-36	29	21	7	15	16	7	5

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

000--DEFINITE ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT				RETURN													
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
ENGLAND AFB																		
5000	9	0	3	4	5	-1	-3	-10	-8	-3	-4	-6	-14	-16	12	12	365 N.M.I.	
10000	20	15	3	7	10	1	0	-21	-16	-2	-8	-11	-22	-24	13	13	8 11	
18000	36	29	1	17	19	4	1	-39	-31	-1	-19	-22	-39	-42	19	18	9 12	
ENGLAND AFB																		
5000	-6	-4	-1	-4	-4	-12	-14	5	3	1	4	3	-4	-6	13	13	356 N.M.I.	
10000	-17	-13	0	-7	-9	-19	-22	15	11	0	6	7	-1	-3	13	13	9 11	
18000	-33	-27	-2	-17	-19	-35	-38	25	22	2	15	14	2	0	20	18	10 13	
ENGLAND AFB																		
5000	-8	-4	-2	-4	-4	-13	-15	7	5	2	4	4	-3	-5	13	13	294 N.M.I.	
10000	-19	-14	0	-8	-10	-20	-23	18	13	0	7	8	0	-2	13	13	9 11	
18000	-37	-30	0	-18	-20	-37	-41	12	27	0	16	17	2	0	20	18	9 13	
ENGLAND AFB																		
5000	4	3	3	2	2	-4	-5	-8	-4	-3	-2	-4	-11	-13	13	12	723 N.M.I.	
10000	6	4	3	2	3	-4	-6	-12	-8	-4	-5	-8	-16	-18	13	13	8 10	
18000	7	3	0	1	2	-8	-11	-24	-14	-2	-9	-11	-25	-29	19	19	10 13	
ENGLAND AFB																		
5000	-3	-1	0	-1	-1	-7	-8	2	0	0	0	0	-5	-6	9	9	1105 N.M.I.	
10000	-16	-11	-3	-8	-10	-17	-19	14	9	2	8	7	1	0	11	10	6 8	
18000	-32	-24	-8	-19	-20	-33	-36	26	20	7	16	15	5	3	17	16	8 9	
ENGLAND AFB																		
5000	0	2	0	0	0	-5	-7	-1	-3	1	-1	-1	-7	-9	10	10	730 N.M.I.	
10000	10	8	0	3	4	-2	-4	-12	-9	1	-4	-6	-14	-16	11	11	7 10	
18000	21	22	0	10	12	1	-1	-28	-25	0	-12	-15	-29	-32	15	15	8 13	
ENGLAND AFB																		
5000	10	8	0	0	0	0	-2	-11	-9	-4	-4	-7	-14	-16	12	11	504 N.M.I.	
10000	21	16	4	7	11	2	0	-22	-17	-4	-7	-12	-22	-25	12	12	8 10	
18000	38	29	3	14	20	6	3	-40	-32	-3	-20	-23	-39	-43	18	17	8 12	
ENGLAND AFB																		
5000	11	8	5	4	6	-1	-2	-12	-9	-5	-4	-8	-16	-18	13	13	352 N.M.I.	
10000	20	14	4	7	11	1	0	-22	-16	-5	-8	-13	-23	-25	14	14	9 11	
18000	34	23	0	15	16	2	0	-40	-28	-1	-18	-21	-38	-42	20	19	10 13	
ENGLAND AFB																		
5000	8	7	3	4	5	-1	-3	-9	-8	-3	-4	-6	-13	-15	11	11	504 N.M.I.	
10000	19	15	3	6	9	1	0	-20	-16	-2	-6	-11	-20	-23	12	12	8 10	
18000	35	29	2	16	19	5	2	-38	-31	-2	-18	-22	-38	-41	17	17	9 11	

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

---DENOTES ANNUAL FOUR VALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
ENGLAND AFB	699 N.M.I.																	
5000	-1	0	-2	0	-1	-7	-9	0	-1	2	0	0	-6	-7	10	10	7	9
10000	3	6	-2	2	2	-4	-5	-10	-8	2	-3	-4	-12	-14	11	11	7	10
18000	19	19	0	8	9	0	-2	-24	-23	0	-10	-13	-26	-29	15	14	8	13
ENGLAND AFB	1553 N.M.I.																	
5000	-3	-2	0	-2	-2	-7	-8	2	2	0	2	1	-3	-4	8	8	6	7
10000	-14	-10	-4	-9	-10	-17	-18	15	9	4	8	8	7	1	9	9	7	9
18000	-31	-21	-11	-21	-20	-31	-34	24	16	9	17	15	6	4	15	14	9	14
ENGLAND AFB	217 N.M.I.																	
5000	4	3	4	3	2	-5	-7	-5	-4	-4	0	-4	-12	-14	14	13	9	11
10000	3	2	3	2	2	-8	-4	-9	-5	-3	-1	-5	-14	-16	14	14	10	14
18000	1	-1	-5	-1	-2	-14	-17	-17	-4	4	-4	-5	-19	-23	21	20	11	19
ENGLAND AFB	685 N.M.I.																	
5000	10	7	5	7	6	0	-2	-11	-8	-4	-4	-7	-14	-16	13	12	8	10
10000	18	12	6	7	10	1	0	-22	-15	-6	-8	-13	-22	-25	13	13	9	13
18000	29	17	4	14	14	2	0	-39	-25	-6	-19	-21	-37	-41	19	19	10	18
ENGLAND AFB	1471 N.M.I.																	
5000	10	7	6	6	7	1	0	-12	-8	-6	-7	-9	-15	-16	10	10	7	9
10000	20	13	9	11	12	5	4	-24	-16	-10	-12	-15	-23	-26	11	11	8	10
18000	32	19	11	20	18	8	4	-42	-26	-14	-26	-26	-39	-43	16	16	9	15
ENGLAND AFB	1011 N.M.I.																	
5000	-5	-3	0	-1	-3	-8	-10	4	3	0	0	1	-3	-5	9	9	6	8
10000	-17	-13	-1	-7	-9	-18	-20	16	13	1	6	8	1	0	11	9	7	10
18000	-35	-29	-3	-17	-20	-35	-38	32	26	3	15	17	5	3	17	15	9	14
ENGLAND AFB	1016 N.M.I.																	
5000	12	9	5	5	7	1	0	-13	-10	-5	-6	-9	-15	-17	11	11	7	9
10000	23	17	8	9	13	5	3	-26	-19	-8	-10	-15	-25	-27	12	12	8	11
18000	38	24	8	20	20	8	6	-45	-30	-10	-24	-26	-41	-45	17	17	10	16
ENGLAND AFB	258 N.M.I.																	
5000	9	6	5	2	5	-2	-4	-9	-7	-5	-2	-6	-14	-16	14	13	9	11
10000	17	9	4	4	7	-1	-1	-17	-12	-4	-5	-10	-19	-22	14	14	10	14
18000	20	11	-2	7	6	-5	-8	-32	-20	1	-12	-14	-31	-35	21	20	11	19
ENGLAND AFB	797 N.M.I.																	
5000	-7	-8	-4	0	-5	-11	-13	6	8	4	0	4	-1	-2	10	9	6	9
10000	-9	-7	-1	-2	-5	-11	-13	8	7	1	2	4	-1	-3	5	5	7	8
18000	-19	-14	1	-6	-8	-19	-22	15	10	-1	5	5	-2	-4	14	12	7	11

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
*WIND SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS														STANDARD DEVIATION				
	DIRECT							RETURN											
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85					
ENGLAND AFB	MINN-ST PAUL															815 N.M.I.			
5000	-1	0	1	-1	0	-8	-10	0	-1	-2	0	-1	-8	-10	12		12	9	10
10000	-3	-2	0	-2	-2	-13	-12	-2	0	-1	0	-1	-9	-11	12		13	10	12
18000	-9	-6	-3	-7	-6	-17	-20	-8	-3	1	0	-2	-13	-17	19	18	11	17	
ENGLAND AFB	MINOT AFB															1092 N.M.I.			
5000	-0	-3	0	-5	-4	-11	-13	4	1	0	4	1	-5	-6	11		11	8	10
10000	-17	-7	-3	-9	-8	-15	-17	7	5	2	6	4	-2	-4	11		11	9	11
18000	-21	-15	-8	-15	-14	-25	-28	8	6	5	9	6	-2	-5	17	16	10	16	
ENGLAND AFB	NELLIS AFB															1157 N.M.I.			
5000	-3	-3	0	0	-2	-7	-9	3	2	0	0	1	-4	-5	9		8	6	8
10000	-17	-13	-2	-7	-10	-17	-19	15	12	2	7	8	1	0	10		9	7	9
18000	-34	-28	-7	-17	-20	-34	-37	30	25	6	15	17	6	4	17	15	9	14	
ENGLAND AFB	NEW CUMBERLAND															930 N.M.I.			
5000	11	8	5	5	6	0	-1	-13	-9	-5	-6	-8	-16	-18	12		11	8	10
10000	22	16	8	8	13	4	2	-25	-18	-8	-9	-15	-24	-27	12		12	9	12
18000	36	22	7	19	19	7	4	-44	-29	-9	-23	-25	-41	-45	18	18	10	17	
ENGLAND AFB	NEW ORLEANS															150 N.M.I.			
5000	5	4	0	3	2	-4	-6	-6	-5	0	-3	-4	-11	-14	13		13	8	11
10000	14	9	0	6	6	-2	-4	-16	-11	0	-6	-8	-18	-20	13		14	9	13
18000	24	23	0	13	13	0	-2	-32	-27	0	-16	-18	-34	-38	19	19	10	18	
ENGLAND AFB	NIAGARA FALLS															958 N.M.I.			
5000	9	6	5	5	6	0	-2	-11	-7	-5	-6	-8	-15	-16	12		11	8	10
10000	18	12	7	8	10	3	1	-22	-15	-8	-9	-14	-22	-25	12		12	9	12
18000	27	15	6	15	14	3	0	-39	-24	-9	-21	-22	-37	-41	18	18	10	17	
ENGLAND AFB	CXNAEC AFB															1346 N.M.I.			
5000	-4	-3	-1	0	-2	-7	-8	3	3	1	0	1	-3	-4	8		8	5	7
10000	-16	-12	-2	-6	-9	-16	-18	15	12	2	6	8	1	0	10		9	7	9
18000	-34	-28	-5	-16	-20	-33	-36	30	25	4	14	16	5	3	16	14	8	13	
ENGLAND AFB	PATRICK AFB															649 N.M.I.			
5000	4	5	1	3	3	-3	-5	-5	-6	-1	-3	-4	-11	-13	11		11	7	10
10000	15	12	1	5	7	0	-2	-17	-13	-1	-5	-9	-18	-20	12		12	8	11
18000	30	26	1	14	16	3	1	-34	-29	-1	-16	-20	-34	-38	16	16	9	14	
ENGLAND AFB	PITTSBURGH															813 N.M.I.			
5000	10	7	5	5	6	0	-2	-12	-8	-5	-5	-8	-15	-17	12		12	8	10
10000	20	13	7	8	11	3	1	-23	-16	-7	-9	-13	-23	-26	13		13	9	12
18000	31	19	6	16	16	4	2	-41	-26	-7	-21	-22	-38	-42	19	18	10	18	

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS*														STANDARD DEVIATION			
	DIRECT							RETURN										
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
ENGLAND AFB																		
TO																		
PEGINA																		
5000	-6	-3	0	-5	-4	-10	-12	5	2	0	4	2	-3	-5	10	10	8	9
10000	-13	-8	-4	-9	-9	-16	-18	9	6	3	7	6	0	-2	11	11	8	10
18000	-23	-16	-9	-17	-16	-27	-29	11	8	6	11	8	0	-2	16	15	10	15
ENGLAND AFB																		
TO																		
SCOTT AFB																		
5000	5	4	3	1	3	-4	-6	-7	-5	-3	-2	-5	-13	-15	14	13	9	11
10000	7	4	3	2	3	-4	-6	-12	-8	-3	-4	-7	-16	-18	14	14	10	13
18000	9	3	-1	1	2	-9	-11	-25	-14	0	-8	-11	-25	-29	20	19	11	19
ENGLAND AFB																		
TO																		
SELFRIDGE AFB																		
5000	8	5	4	4	5	-1	-3	-10	-7	-4	-4	-6	-14	-16	12	12	8	10
10000	14	9	5	6	9	0	-1	-19	-12	-6	-8	-11	-20	-22	13	13	9	12
18000	21	12	4	10	13	0	-2	-35	-21	-6	-17	-18	-33	-37	19	18	10	18
ENGLAND AFB																		
TO																		
SHAW AFB																		
5000	12	9	5	4	7	0	-1	-12	-9	-4	-4	-7	-15	-17	12	11	8	10
10000	23	17	5	7	11	3	1	-24	-18	-5	-8	-13	-24	-26	13	13	8	12
18000	39	29	3	18	20	6	3	-42	-32	-4	-21	-24	-41	-44	18	18	10	17
ENGLAND AFB																		
TO																		
WFOSTER AFB																		
5000	12	8	6	6	7	1	0	-13	-9	-6	-6	-9	-15	-17	11	11	7	9
10000	23	16	9	10	13	6	4	-26	-18	-9	-11	-16	-25	-27	12	12	8	11
18000	37	22	9	20	20	8	6	-45	-29	-11	-25	-26	-41	-45	17	17	10	16
ENGLAND AFB																		
TO																		
MURTSWORTH																		
5000	6	4	4	3	4	-2	-4	-8	-5	-4	-4	-6	-13	-15	12	12	8	10
10000	11	7	5	5	6	-1	-3	-16	-10	-6	-7	-10	-18	-21	13	13	9	12
18000	15	8	3	7	7	-3	-5	-31	-18	-6	-15	-16	-30	-34	19	18	10	18
ENGLAND AFB																		
TO																		
YAKIMA																		
5000	-3	-2	0	-2	-2	-7	-8	2	1	0	1	0	-3	-5	6	8	6	7
10000	-16	-10	-4	-9	-10	-16	-18	14	9	4	8	8	2	1	9	9	7	8
18000	-31	-22	-11	-21	-21	-32	-35	24	17	9	17	15	6	4	15	14	9	14
ENIWEK ATOLL																		
TO																		
IWO JIMA AB																		
5000	3	9	8	9	7	3	2	-4	-9	-8	-8	-8	-12	-13	7	6	6	5
10000	0	1	6	6	3	-1	-2	-2	-2	-6	-7	-5	-9	-10	7	6	6	6
18000	6	-8	4	3	1	-5	-7	-11	6	-4	-4	-4	-10	-12	10	8	7	8
ENIWEK ATOLL																		
TO																		
JOHNSTON ISLAND																		
5000	-11	-14	-14	-13	-14	-17	-17	11	15	15	14	14	10	10	6	4	4	4
10000	-5	-8	-9	-10	-9	-12	-13	5	8	10	11	9	5	4	7	6	4	4
18000	-4	0	-6	-6	-5	-10	-11	2	0	6	7	4	-1	-2	9	7	6	6

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS IN KNOTS												STANDARD DEVIATION					
	DIRECT						RETURN						JAN APR JUL OCT					
	JAN	APR	JUL	OCT	A50	A75	A85	JAN	APR	JUL	OCT	A50	A75	A85	JAN	APR	JUL	OCT
ENIWE TOK ATOLL																		
5000	-12	-14	-11	-8	-11	-16	-17	11	14	12	9	11	7	6	359 N.M.I.			
10000	-9	-7	-11	-9	-10	-14	-15	10	8	12	10	10	5	4	7 6 4			
18000	-13	-2	-10	-9	-9	-15	-17	13	2	10	10	8	2	0	8 7 6 6			
ENIWE TOK ATOLL																		
5000	0	-3	-7	-6	-5	-9	-10	0	2	7	5	3	-1	-2	1526 N.M.I.			
10000	-2	0	-5	-5	-4	-8	-9	1	0	5	5	2	-2	-3	7 6 5 6			
18000	7	3	-2	-3	0	-6	-7	-12	-4	2	2	-2	-10	-12	8 7 5 6			
ENIWE TOK ATOLL																		
5000	4	5	3	3	2	0	-1	-4	-5	-3	0	-3	-7	-8	1543 N.M.I.			
10000	5	5	3	4	4	1	0	-4	-5	-3	-4	-5	-7	-8	5 5 4 4 4			
18000	6	4	5	5	4	1	0	-6	-4	-5	-5	-6	-9	-10	6 5 5 6 5			
ENIWE TOK ATOLL																		
5000	0	-4	-5	-3	-4	-7	-7	-1	4	5	3	2	0	-1	1970 N.M.I.			
10000	-4	-1	-4	-3	-3	-7	-7	4	1	3	3	2	0	-1	6 5 4 5 4			
18000	-4	1	-4	-2	-2	-7	-8	3	0	3	2	1	-2	-3	6 5 5 6 5			
ENIWE TOK ATOLL																		
5000	0	4	5	5	3	-1	-2	0	-5	-5	-5	-4	-9	-10	1898 N.M.I.			
10000	-10	-4	3	1	-2	-9	-10	5	2	-3	-2	0	-5	-6	7 6 6 6 6			
18000	-17	-19	0	-6	-11	-20	-22	-5	12	-1	1	0	-6	-8	7 7 6 7 7			
ENIWE TOK ATOLL																		
5000	9	6	3	0	4	0	-1	-9	-7	-3	0	-5	-9	-10	1507 N.M.I.			
10000	8	6	6	7	6	3	2	-7	-6	-6	-6	-7	-10	-11	5 5 5 4 4			
18000	12	8	8	8	8	5	4	-12	-7	-9	-8	-9	-13	-14	6 5 5 6 5			
ENIWE TOK ATOLL																		
5000	-4	-4	-6	-5	-5	-10	-11	3	3	5	4	3	0	-1	540 N.M.I.			
10000	-1	0	-2	-4	-2	-7	-8	1	0	2	3	1	-3	-4	7 7 6 6 6			
18000	2	-1	0	-1	0	-7	-8	-3	1	0	1	0	-7	-8	9 7 6 6 6			
FORT BENNING																		
5000	-9	-7	-4	-4	-6	-13	-14	8	6	3	4	5	-1	-2	1090 N.M.I.			
10000	-21	-16	-2	-8	-12	-21	-23	20	15	2	7	10	2	0	10 7 9			
18000	-39	-31	-3	-19	-23	-37	-41	36	29	3	17	20	6	4	11 10 8 10			
FORT BENNING																		
5000	12	9	5	4	7	0	-1	-13	-9	-4	-4	-8	-15	-17	336 N.M.I.			
10000	22	17	6	6	11	2	0	-24	-19	-6	-7	-13	-24	-27	12 12 8 11			
18000	38	26	7	19	20	7	4	-43	-31	-8	-22	-25	-42	-46	14 14 9 13			

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION							
	DIRECT					RETURN												
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
FORT BENNING																		
FORT CAMPBELL																		
5000	-5	-4	-1	-2	-3	-11	-13	3	2	1	2	1	-5	-7	14	13	279 N.M.I.	
10000	-12	-10	-2	-4	-7	-17	-19	6	6	1	3	3	-4	-7	14	14	9 11	
18000	-23	-20	-6	-12	-14	-28	-32	5	10	5	6	6	-5	-8	21	20	10 14	
FORT BENNING																		
FORT CARSON																		
5000	-9	-7	-4	-5	-7	-13	-15	8	6	4	5	5	0	-2	11	11	1034 N.M.I.	
10000	-21	-15	-5	-10	-13	-21	-23	19	14	5	10	11	3	2	11	11	8 9	
18000	-39	-30	-10	-22	-24	-38	-42	32	26	10	19	20	9	7	18	16	9 16	
FORT BENNING																		
FORT EUSTIS																		
5000	11	8	4	4	6	0	-2	-12	-9	-4	-4	-7	-15	-17	12	12	526 N.M.I.	
10000	20	15	7	7	11	2	0	-23	-18	-7	-8	-14	-24	-27	14	14	8 11	
18000	34	21	8	19	18	6	3	-42	-28	-9	-24	-24	-40	-44	20	19	9 13	
FORT BENNING																		
FORT HOOE																		
5000	-11	-8	-4	-4	-7	-14	-16	10	8	4	4	6	0	-2	12	11	651 N.M.I.	
10000	-22	-17	-3	-3	-12	-22	-25	21	16	3	7	10	2	0	12	12	8 10	
18000	-40	-31	-1	-19	-22	-39	-42	39	29	0	17	19	4	1	18	17	9 16	
FORT BENNING																		
FORT HUACHUCA																		
5000	-8	-6	-3	-3	-5	-11	-12	7	6	3	2	4	-1	-2	9	9	1291 N.M.I.	
10000	-20	-15	-2	-8	-11	-19	-21	19	15	2	7	10	2	1	10	9	6 8	
18000	-38	-31	-4	-18	-22	-37	-40	35	28	3	15	19	6	4	15	14	7 9	
FORT BENNING																		
FORT KNOX																		
5000	-1	-1	0	-1	-1	-9	-11	0	0	0	0	0	-8	-10	13	13	326 N.M.I.	
10000	-5	-4	0	-1	-3	-12	-14	-1	0	0	0	0	-9	-11	14	14	9 11	
18000	-11	-11	-3	-6	-7	-20	-23	-8	0	2	-1	-1	-14	-17	21	20	10 14	
FORT BENNING																		
FORT LEAVENWORTH																		
5000	-9	-7	-3	-3	-6	-14	-16	8	6	3	5	5	-2	-3	13	12	636 N.M.I.	
10000	-20	-14	-5	-9	-12	-22	-24	16	12	5	8	5	1	0	13	13	9 10	
18000	-35	-27	-10	-21	-22	-37	-41	24	20	9	16	16	4	2	20	19	10 13	
FORT BENNING																		
FORT LEWIS																		
5000	-7	-5	-3	-5	-5	-10	-12	9	5	3	5	4	0	-1	8	8	1919 N.M.I.	
10000	-19	-12	-7	-11	-12	-19	-21	18	11	7	10	11	5	3	9	9	6 7	
18000	-34	-24	-15	-24	-24	-34	-37	28	19	14	20	19	11	9	14	13	7 8	
FORT BENNING																		
FORT ORD																		
5000	-6	-5	-2	-2	-4	-9	-10	5	4	2	1	2	-1	-2	8	7	1026 N.M.I.	
10000	-16	-14	-5	-9	-11	-18	-20	16	13	5	8	5	4	2	9	9	5 6	
18000	-36	-28	-11	-19	-22	-34	-37	31	25	10	17	19	10	9	15	13	6 8	

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EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWIND IN KNOTS										STANDARD DEVIATION							
		DIRECT					RETURN												
		JAN	APR	JUL	OCT	♦♦A50	A75	A85	JAN	APR	JUL	OCT	♦♦A50	A75	A85	JAN	APR	JUL	OCT
FORT PENNING																			
TO																			
5000		-10	-8	-5	-5	-7	-15	-16	9	8	5	5	6	0	-2	12	12	8	10
10000		-23	-17	-4	-10	-13	-23	-26	22	16	4	9	12	3	1	12	12	9	12
18000		-41	-32	-7	-21	-24	-40	-44	36	29	6	19	20	7	5	19	17	10	17
FORT PENNING																			
TO																			
5000		-11	-8	-4	-5	-7	-15	-17	10	8	4	5	6	0	-2	12	12	8	10
10000		-23	-17	-3	-9	-13	-23	-25	22	16	3	8	11	2	0	12	12	9	12
18000		-41	-32	-4	-20	-24	-40	-43	38	30	3	18	20	6	3	18	17	10	16
FORT PENNING																			
TO																			
5000		1	0	2	3	1	-4	-5	-3	-2	-3	-4	-4	-9	-10	9	9	7	8
10000		3	0	1	2	1	-4	-6	-8	-3	-3	-5	-5	-11	-13	10	10	7	9
18000		4	0	1	3	1	-6	-8	-18	-8	-5	-11	-10	-20	-22	13	13	9	13
FORT PENNING																			
TO																			
5000		-3	-3	-1	-1	-2	-10	-12	1	1	0	1	0	-6	-8	13	12	9	11
10000		-8	-6	-2	-3	-5	-14	-16	1	2	1	1	1	-7	-9	14	14	10	13
18000		-17	-13	-5	-10	-11	-23	-27	-3	2	3	1	0	-10	-14	20	20	11	19
FORT PENNING																			
TO																			
5000		-6	-5	-2	-3	-4	-10	-11	5	4	2	3	3	-1	-3	9	9	6	8
10000		-19	-13	-6	-10	-12	-19	-21	18	12	6	10	11	4	2	10	10	8	9
18000		-36	-27	-12	-22	-23	-36	-39	30	23	11	19	19	9	7	16	15	9	14
FORT PENNING																			
TO																			
5000		-3	0	-2	0	-2	-8	-10	2	0	2	0	1	-5	-6	11	10	7	10
10000		3	3	-1	0	0	-6	-8	-6	-5	1	0	-2	-10	-12	12	12	8	11
18000		10	10	0	3	4	-4	-6	-18	-17	0	-6	-9	-21	-24	16	16	9	14
FORT PENNING																			
TO																			
5000		9	8	4	4	6	-1	-3	-10	-8	-4	-4	-7	-15	-17	13	12	9	11
10000		21	17	5	5	11	1	0	-22	-18	-4	-6	-12	-23	-26	14	14	9	13
18000		37	29	6	18	20	6	4	-40	-32	-6	-20	-23	-40	-44	20	20	11	18
FORT PENNING																			
TO																			
5000		-5	-5	-2	-3	-4	-12	-14	4	3	2	2	2	-5	-7	14	13	9	12
10000		-14	-11	-2	-5	-8	-18	-21	9	8	2	3	5	-3	-6	15	15	10	14
18000		-27	-23	-6	-14	-16	-31	-35	12	15	6	9	9	-1	-4	21	20	11	19
FORT PENNING																			
TO																			
5000		4	5	1	3	3	-4	-5	-5	-5	-1	-3	-4	-11	-13	12	12	8	11
10000		13	10	2	3	6	-2	-4	-16	-13	-2	-4	-8	-18	-21	14	14	9	13
18000		24	21	5	12	13	2	0	-32	-26	-5	-15	-18	-33	-37	19	19	10	17

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EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS										STANDARD DEVIATION				
	DIRECT					EQUVALENT					RETURN				
	JAN	APR	JUL	OCT	DEC	JAN	APR	JUL	OCT	DEC	JAN	APR	JUL	OCT	DEC
FORT BENNING	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-4	-2	-3	-1	-3	-9	-11	-9	-11	-9	3	1	3	1	2
10000	0	0	-2	-1	-1	-8	-10	-8	-10	-8	-3	-2	2	0	0
18000	3	6	0	0	1	-7	-9	-7	-9	-7	-13	-12	0	-3	-6
FORT BENNING	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-8	-6	-3	-5	-5	-11	-12	-11	-12	-11	7	5	3	5	4
10000	-20	-12	-7	-12	-13	-20	-22	-20	-22	-20	18	11	7	11	11
18000	-34	-24	-15	-24	-24	-34	-37	-34	-37	-34	28	19	13	20	19
FORT BENNING	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-11	-8	-4	-5	-7	-15	-17	-15	-17	-15	9	8	4	4	5
10000	-22	-17	-4	-9	-13	-23	-26	-23	-26	-23	20	15	4	8	11
18000	-40	-31	-8	-21	-24	-40	-44	-40	-44	-40	33	28	7	18	19
FORT BENNING	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	3	1	1	1	1	-6	-7	-6	-7	-6	-5	-3	-1	-2	-3
10000	4	2	2	2	2	-6	-8	-6	-8	-6	-11	-7	-3	-4	-6
18000	6	0	1	3	2	-9	-12	-9	-12	-9	-24	-11	-2	-11	-11
FORT BENNING	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	9	6	5	6	6	0	-1	0	-1	0	-11	-7	-5	-6	-8
10000	16	11	8	9	10	3	1	3	1	3	-22	-15	-9	-11	-14
18000	28	15	11	19	17	6	4	6	4	6	-40	-24	-14	-25	-24
FORT BENNING	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-7	-6	-3	-3	-5	-11	-12	-11	-12	-11	6	5	3	2	3
10000	-20	-15	-3	-8	-11	-19	-21	-19	-21	-19	19	15	3	8	10
18000	-38	-30	-6	-19	-23	-35	-39	-35	-39	-35	34	28	6	17	19
FORT BENNING	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	7	4	5	6	0	-2	0	-2	0	-12	-8	-4	-5	-7
10000	19	15	7	7	11	2	0	2	0	2	-23	-18	-9	-9	-14
18000	33	19	9	19	18	6	3	6	3	6	-42	-27	-11	-24	-25
FORT BENNING	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-10	-8	-3	-4	-6	-14	-17	-14	-17	-14	8	7	3	4	5
10000	-21	-16	-4	-8	-12	-23	-25	-23	-25	-23	18	14	4	7	10
18000	-37	-30	-8	-19	-22	-38	-42	-38	-42	-38	28	25	7	16	17
FORT BENNING	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-4	-7	-2	3	-4	-10	-11	-10	-11	-10	5	6	2	0	3
10000	-11	-9	-1	-2	-6	-12	-14	-12	-14	-12	10	8	1	2	4
18000	-24	-18	2	-9	-12	-23	-26	-23	-26	-23	20	14	-2	7	8

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT						RETURN						JAN APR JUL OCT					
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
FORT BENNING																		
5000	TO	-7	-5	-2	-4	-5	-12	-14	5	3	2	3	3	-3	-5	12	12	836 N.MI.
10000		-14	-10	-5	-7	-9	-18	-20	8	7	4	5	5	-2	-4	13	13	8 10
18000		-26	-19	-10	-17	-17	-30	-33	10	10	7	10	8	-1	-4	19	18	10 12
FORT BENNING																		
5000	TO	-9	-6	-3	-6	-6	-13	-15	8	5	3	5	5	-1	-3	11	11	1199 N.MI.
10000		-18	-12	-7	-11	-12	-20	-22	14	9	6	9	9	1	0	11	12	8 10
18000		-30	-21	-13	-21	-21	-32	-35	18	14	11	15	14	4	2	17	16	9 11
FORT BENNING																		
5000	TO	-6	-5	-3	-2	-4	-9	-11	5	5	2	2	3	-1	-2	6	8	1502 N.MI.
10000		-19	-15	-5	-9	-12	-19	-21	18	14	5	8	10	4	2	10	9	6 7
18000		-37	-30	-10	-20	-23	-36	-39	33	26	9	17	19	9	7	15	14	7 9
FORT BENNING																		
5000	TO	9	6	3	4	5	-1	-3	-11	-7	-3	-5	-7	-14	-16	12	12	603 N.MI.
10000		16	12	6	5	9	1	-1	-21	-16	-7	-8	-13	-22	-25	14	14	8 11
18000		27	15	7	16	14	3	0	-40	-24	-9	-22	-22	-38	-42	20	20	9 13
FORT BENNING																		
5000	TO	-11	-8	-4	-3	-7	-14	-16	11	8	4	3	6	-1	-2	12	12	305 N.MI.
10000		-20	-16	-4	-6	-11	-21	-24	19	15	4	6	10	1	0	13	13	8 11
18000		-38	-28	0	-17	-20	-37	-41	34	24	0	15	16	2	0	19	18	9 12
FORT BENNING																		
5000	TO	5	3	2	3	3	-4	-5	-7	-4	-2	-4	-5	-12	-14	12	12	693 N.MI.
10000		9	6	4	5	5	-2	-4	-16	-10	-5	-6	-9	-18	-21	14	14	8 11
18000		13	4	4	9	6	-4	-7	-31	-16	-7	-17	-17	-31	-35	20	19	9 13
FORT BENNING																		
5000	TO	-6	-5	-3	-1	-4	-9	-10	5	5	3	1	3	-1	-2	8	8	1708 N.MI.
10000		-18	-14	-4	-8	-11	-18	-20	17	14	4	8	10	3	2	9	9	5 7
18000		-36	-29	-9	-18	-22	-34	-38	32	26	8	16	19	9	7	15	13	6 8
FORT BENNING																		
5000	TO	0	2	0	2	0	-5	-7	-1	-3	0	-2	-2	-8	-10	11	11	340 N.MI.
10000		8	7	1	2	4	-3	-5	-11	-9	0	-2	-5	-14	-16	13	13	8 10
18000		17	16	3	7	9	0	-3	-26	-22	-3	-11	-14	-28	-32	18	18	9 12
FORT BENNING																		
5000	TO	6	3	2	3	3	-3	-5	-8	-5	-2	-3	-5	-12	-14	13	12	528 N.MI.
10000		10	7	4	4	6	-2	-4	-16	-11	-5	-6	-10	-19	-21	14	14	8 11
18000		15	6	4	10	8	-3	-6	-32	-17	-6	-17	-17	-32	-36	20	20	10 13

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND M.E.A.D.M.I.N.D.S.												STANDARD DEVIATION			
	DIRECT						RETURN						JAN APR JUL OCT			
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50				
FORT BENNING																
5000	-9	-6	-3	-7	-7	-13	-15	8	4	3	6	5	-1	-2	1385 N.M.I.	
10000	-18	-12	-8	-11	-13	-20	-22	14	9	7	9	9	2	1	10 10 8 9	
18000	-30	-21	-14	-22	-21	-32	-35	19	14	11	16	14	5	3	10 11 8 10	
FORT BENNING																
5000	-7	-5	-2	-3	-5	-12	-14	5	4	2	3	3	-4	-6	438 N.M.I.	
10000	-15	-12	-3	-6	-9	-19	-21	9	8	3	5	6	-2	-4	13 13 9 11	
18000	-28	-22	-8	-16	-17	-32	-35	11	13	7	10	9	-1	-4	14 14 10 14	
FORT BENNING																
5000	1	0	1	1	0	-6	-8	-4	-2	-1	-2	-3	-10	-12	612 N.M.I.	
10000	1	1	1	1	1	-7	-9	-9	-5	-2	-4	-5	-14	-16	13 12 8 11	
18000	0	-2	0	1	0	-11	-14	-21	-9	-2	-10	-10	-23	-27	14 14 10 13	
FORT BENNING																
5000	12	9	5	4	7	0	-2	-12	-9	-5	-4	-8	-16	-18	238 N.M.I.	
10000	22	18	6	6	12	2	0	-24	-19	-6	-7	-13	-24	-27	13 12 9 11	
18000	39	28	7	19	21	7	4	-42	-31	-7	-21	-24	-41	-45	14 14 9 13	
FORT BENNING																
5000	10	7	5	5	6	0	-2	-12	-8	-5	-6	-8	-15	-17	825 N.M.I.	
10000	18	14	8	8	11	3	1	-23	-17	-9	-10	-15	-24	-26	12 11 8 10	
18000	31	18	10	19	18	6	3	-42	-26	-12	-24	-25	-40	-44	13 13 9 12	
FORT BENNING																
5000	0	0	0	0	0	-7	-9	-3	-1	0	-1	-2	-9	-11	720 N.M.I.	
10000	0	0	0	1	0	-8	-10	-7	-4	-1	-3	-4	-13	-15	13 12 8 11	
18000	-3	-4	-1	0	-2	-14	-17	-17	-6	-2	-8	-8	-20	-24	13 14 10 13	
FORT BENNING																
5000	-7	-6	-3	-5	-6	-11	-12	6	5	3	5	4	0	-1	1830 N.M.I.	
10000	-19	-12	-7	-11	-12	-19	-21	18	11	6	10	10	4	3	8 8 6 7	
18000	-34	-24	-15	-24	-24	-34	-37	28	20	13	20	19	10	8	9 9 7 9	
FORT BLISS																
5000	10	8	5	4	6	0	0	-11	-9	-5	-5	-8	-14	-15	1384 N.M.I.	
10000	24	17	5	8	12	4	3	-24	-18	-5	-9	-14	-23	-25	10 9 6 8	
18000	38	30	7	18	21	9	7	-42	-32	-7	-21	-25	-39	-43	10 10 7 10	
FORT BLISS																
5000	9	8	6	5	6	0	-1	-10	-8	-6	-5	-8	-14	-16	979 N.M.I.	
10000	21	16	5	9	12	4	2	-22	-17	-5	-10	-13	-22	-25	11 11 7 9	
18000	34	27	8	17	19	8	6	-40	-31	-8	-20	-23	-38	-42	11 11 8 11	

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION		
	DIRECT						RETURN						JAN APR JUL OCT		
	JAN	APR	JUL	OCT	00450	075	00450	075	00450	075	075	075	075	075	075
FORT BLISS															
5000	4	6	7	6	5	0	-1	-4	-6	-7	-5	-6	-12	-13	421 N.M.I.
10000	0	3	4	2	2	-5	-7	-3	-5	-4	-3	-4	-12	-14	9 6 9
18000	0	1	6	0	1	-9	-13	-11	-9	-7	-4	-8	-19	-22	13 11 9 11
FORT BLISS															
5000	11	8	6	6	7	2	0	-12	-9	-6	-6	-8	-14	-16	21 19 11 17
10000	23	17	7	9	13	5	4	-25	-19	-7	-10	-15	-24	-26	1505 N.M.I.
18000	39	28	10	20	22	11	9	-44	-32	-11	-23	-27	-41	-44	9 6 8
FORT BLISS															
5000	5	3	0	2	2	-4	-6	-6	-4	0	-2	-3	-10	-12	10 9 6 8
10000	17	13	0	6	8	0	-2	-18	-13	0	-6	-9	-18	-21	10 10 7 10
18000	33	27	1	14	17	3	0	-36	-29	-1	-16	-20	-36	-39	15 14 8 14
FORT BLISS															
5000	0	-1	1	4	0	-4	-6	0	1	0	-3	-1	-6	-7	453 N.M.I.
10000	-14	-11	-1	-5	-8	-16	-18	14	11	1	5	7	0	-2	12 11 7 10
18000	-33	-28	-3	-13	-17	-34	-38	30	26	2	12	15	2	0	12 11 9 11
FORT BLISS															
5000	9	8	6	5	6	0	0	-10	-8	-6	-6	-8	-14	-16	202 N.M.I.
10000	21	16	6	9	12	4	2	-22	-17	-6	-10	-14	-22	-25	9 5 8
18000	35	27	9	17	20	9	6	-40	-30	-9	-21	-24	-38	-42	13 11 9 11
FORT BLISS															
5000	6	7	8	5	6	0	-1	-7	-7	-8	-5	-7	-14	-16	1067 N.M.I.
10000	14	12	6	7	9	2	0	-16	-13	-6	-8	-11	-19	-21	11 10 7 9
18000	23	20	9	11	14	4	1	-32	-25	-9	-16	-19	-33	-37	11 11 8 11
FORT BLISS															
5000	2	2	1	3	1	-1	-2	-2	-2	-1	-3	-2	-6	-7	720 N.M.I.
10000	-11	-6	-1	-3	-5	-12	-14	9	5	1	2	3	-2	-3	11 11 8 10
18000	-24	-16	-6	-14	-14	-26	-29	16	11	3	10	9	0	-3	12 11 9 11
FORT BLISS															
5000	-1	-2	0	3	0	-5	-6	1	2	0	-2	0	-4	-5	1180 N.M.I.
10000	-12	-10	-2	-5	-7	-15	-17	11	9	2	5	6	0	-2	7 6 4 6
18000	-29	-24	-6	-13	-17	-30	-34	25	20	5	11	13	3	0	11 9 7 9
FORT BLISS															
5000	8	6	2	3	4	-1	-3	-8	-6	-3	-4	-6	-12	-13	816 N.M.I.
10000	19	15	1	7	9	1	0	-20	-15	-1	-7	-11	-20	-22	8 7 5 7
18000	35	28	1	16	18	5	2	-38	-31	-1	-18	-22	-37	-40	12 11 7 10
FORT BLISS															
5000	10	10	7	10	15	14	14	10	10	7	10	15	10	15	1070 N.M.I.
10000	10	10	7	10	15	14	14	10	10	7	10	15	10	15	10 10 7 9
18000	10	10	7	10	15	14	14	10	10	7	10	15	10	15	10 10 7 9

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
FORT BLISS																		
5000	6	6	5	4	5	-1	-3	-7	-6	-6	-4	-6	-13	-15	12	11	8	10
10000	17	15	3	7	9	1	0	-18	-15	-3	-8	-11	-20	-22	13	11	9	11
18000	31	26	6	13	16	5	2	-35	-29	-7	-16	-20	-36	-40	20	18	10	17
FORT BLISS																		
5000	6	5	2	3	3	-3	-4	-7	-5	-3	-3	-5	-12	-14	12	11	8	10
10000	18	14	1	7	9	1	0	-19	-15	-1	-7	-11	-20	-22	12	11	9	11
18000	33	28	4	15	18	5	2	-36	-30	-4	-17	-20	-36	-40	20	17	10	17
FORT BLISS																		
5000	7	6	7	6	6	0	-1	-8	-7	-7	-6	-8	-14	-15	11	10	8	9
10000	15	12	7	8	10	3	1	-18	-13	-7	-10	-12	-20	-22	11	11	9	11
18000	25	19	11	13	16	6	3	-34	-25	-12	-18	-21	-34	-37	18	16	10	16
FORT BLISS																		
5000	4	4	6	5	4	0	0	-4	-4	-5	-5	-5	-9	-10	7	7	5	6
10000	-7	-3	1	-2	-3	-10	-12	6	2	-1	1	1	-5	-7	12	10	8	10
18000	-19	-13	0	-10	-9	-23	-26	9	6	-2	6	3	-7	-9	20	18	11	17
FORT BLISS																		
5000	2	2	-1	1	0	-4	-5	-3	-3	1	-1	-1	-7	-8	9	8	5	7
10000	13	10	-1	4	5	0	-2	-14	-11	1	-4	-7	-14	-16	9	8	6	8
18000	27	24	-1	12	14	2	0	-31	-26	1	-13	-17	-30	-33	13	12	7	11
FORT BLISS																		
5000	8	7	3	4	5	0	-1	-9	-7	-3	-4	-6	-12	-13	10	9	6	8
10000	20	16	2	7	10	2	0	-21	-16	-2	-8	-12	-21	-23	10	10	7	10
18000	36	29	3	17	20	7	4	-39	-31	-3	-19	-23	-37	-40	15	14	8	13
FORT BLISS																		
5000	9	7	5	4	6	0	-1	-10	-8	-5	-5	-7	-14	-15	11	10	7	9
10000	21	16	4	8	11	3	1	-22	-17	-4	-9	-13	-22	-24	11	11	8	11
18000	37	29	6	17	20	8	5	-40	-31	-6	-20	-23	-38	-42	17	16	9	15
FORT BLISS																		
5000	7	6	2	3	4	-1	-2	-9	-6	-2	-3	-5	-11	-12	9	9	6	8
10000	19	14	1	6	9	1	0	-20	-15	-1	-7	-11	-19	-21	10	9	7	9
18000	34	28	1	16	19	5	2	-38	-30	-2	-18	-22	-36	-39	15	14	8	13
FORT BLISS																		
5000	1	2	1	2	1	-2	-3	-2	-2	-1	-2	-2	-6	-7	7	6	4	6
10000	-10	-6	-2	-3	-5	-11	-12	7	3	2	1	3	-2	-3	9	8	6	8
18000	-21	-12	-6	-14	-13	-22	-25	14	6	3	8	7	0	-2	14	13	9	12

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.												STANDARD DEVIATION			
	DIRECT						RETURN									
	JAN	APR	JUL	OCT	MAY	NOV	JAN	APR	JUL	OCT	MAY	NOV	JAN	APR	JUL	OCT
FORT BLISS	TO															
5000	1	1	-2	0	0	-5	-6	-2	-2	2	0	0	-6	-7	1367 N.M.I.	
10000	11	9	-2	4	4	-1	-3	-12	-9	2	-4	-4	-6	-13	8 5 7	
18000	25	23	-2	11	13	1	0	-29	-25	2	-12	-12	-16	-29	9 8 6 8	
FORT BLISS	TC															
5000	3	2	2	3	2	-1	-2	-3	-2	-2	-3	-3	-3	-7	1098 N.M.I.	
10000	-10	-5	-1	-3	-5	-11	-13	8	4	0	2	2	3	-3	7 5 6	
18000	-22	-15	-4	-13	-13	-25	-28	14	9	1	9	9	7	-2	11 9 7 9	
FORT BLISS	TO															
5000	8	7	5	4	5	-1	-2	-8	-7	-6	-5	-5	-7	-14	737 N.M.I.	
10000	20	16	3	8	11	2	0	-21	-16	-3	-9	-9	-12	-21	12 11 8 10	
18000	35	28	6	16	19	6	4	-39	-30	-6	-18	-18	-22	-38	12 11 9 11	
FORT BLISS	TO															
5000	9	8	7	6	7	1	0	-11	-9	-7	-6	-6	-9	-15	1231 N.M.I.	
10000	21	16	7	10	12	5	3	-23	-17	-7	-11	-11	-14	-23	11 10 7 9	
18000	35	26	10	18	20	9	7	-41	-30	-11	-22	-22	-25	-39	11 11 8 10	
FORT BLISS	TO															
5000	10	7	8	8	8	2	1	-11	-8	-8	-8	-8	-9	-15	1977 N.M.I.	
10000	20	13	10	12	13	7	5	-22	-15	-11	-14	-14	-16	-22	9 9 6 8	
18000	32	21	15	19	20	11	9	-39	-26	-17	-25	-25	-26	-37	10 10 7 9	
FORT BLISS	TO															
5000	2	0	2	5	2	-2	-4	-2	0	-2	-4	-4	-3	-8	319 N.M.I.	
10000	-13	-9	0	-4	-6	-15	-17	12	9	1	4	4	5	-1	9 8 5 8	
18000	-31	-25	-2	-13	-16	-32	-36	27	22	1	11	11	13	0	13 10 8 11	
FORT BLISS	TO															
5000	11	9	7	6	8	2	1	-12	-9	-7	-7	-7	-9	-15	1612 N.M.I.	
10000	24	17	8	10	13	6	5	-25	-19	-9	-11	-11	-16	-24	10 9 6 8	
18000	39	27	12	20	22	12	10	-44	-31	-13	-24	-24	-27	-40	10 10 7 9	
FORT BLISS	TO															
5000	8	7	5	4	5	0	-2	-9	-8	-5	-5	-5	-7	-14	843 N.M.I.	
10000	21	16	4	8	11	3	1	-22	-17	-4	-9	-9	-13	-22	11 11 7 9	
18000	36	28	6	16	19	7	4	-39	-31	-6	-19	-19	-23	-38	12 11 8 11	
FORT BLISS	TO															
5000	-7	-8	-7	-3	-7	-12	-13	7	8	8	3	3	6	1	839 N.M.I.	
10000	0	0	-4	-2	-2	-8	-9	-1	0	4	2	2	1	-4	9 8 5 8	
18000	2	3	-5	0	-1	-8	-10	-9	-8	5	0	0	-2	-12	14 12 7 11	

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUILIBRIUM ALTITUDE MEAN WIND DIRECTION												STANDARD DEVIATION			
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
FORT BLISS																
5000	4	5	7	4	5	-1	-2	-5	-6	-7	-4	-4	-6	-12	-14	10
10000	4	7	6	5	6	0	-2	-12	-8	-6	-7	-7	-9	-16	-18	10
18000	13	12	5	3	10	0	-2	-25	-19	-11	-11	-11	-17	-28	-31	13
FORT BLISS																
5000	1	3	5	3	3	-2	-4	-2	-4	-5	-4	-4	-4	-10	-11	9
10000	-1	0	3	0	0	-6	-6	-2	-2	-4	-4	-4	-3	-9	-11	11
18000	-3	0	5	-1	0	-10	-12	-9	-4	-4	-4	-4	-3	-18	-20	18
FORT BLISS																
5000	1	0	3	5	2	-2	-3	-1	0	-2	-4	-4	-2	-7	-8	8
10000	-10	-9	-1	-1	-10	-14	-10	11	5	1	3	3	5	-1	-3	13
18000	-24	-23	-3	-14	-10	-34	-34	23	14	5	10	10	11	0	-2	20
FORT BLISS																
5000	10	8	7	5	7	2	0	-12	-9	-7	-7	-7	-9	-15	-15	10
10000	23	17	6	10	14	6	4	-25	-18	-14	-14	-14	-10	-24	-26	10
18000	38	24	12	20	22	11	9	-44	-31	-13	-13	-13	-25	-41	-44	10
FORT BLISS																
5000	6	4	1	2	2	-3	-4	-7	-5	-1	-3	-3	-4	-11	-12	11
10000	15	13	0	6	3	0	-1	-18	-14	0	-6	-6	-9	-18	-20	11
18000	33	27	0	15	17	3	0	-36	-29	0	-16	-16	-20	-35	-38	17
FORT BLISS																
5000	10	7	7	7	7	1	0	-11	-8	-7	-7	-7	-9	-15	-16	10
10000	20	15	8	10	12	5	4	-22	-16	-9	-12	-12	-15	-22	-24	11
18000	33	23	13	18	20	10	8	-40	-28	-14	-23	-23	-25	-38	-41	16
FORT BLISS																
5000	0	-1	0	4	0	-4	-5	0	1	0	-2	-2	0	-5	-5	8
10000	-12	-10	-2	-5	-7	-15	-17	11	10	2	4	4	6	0	-2	12
18000	-30	-25	-5	-13	-17	-31	-35	26	22	4	11	11	14	3	0	19
FORT BLISS																
5000	5	4	1	3	3	-2	-3	-6	-5	-1	-3	-3	-4	-10	-11	9
10000	17	13	0	5	3	0	0	-19	-14	0	-6	-6	-9	-18	-20	9
18000	32	27	0	14	17	4	1	-35	-29	0	-16	-16	-20	-34	-37	14
FORT BLISS																
5000	10	5	7	4	7	1	0	-11	-9	-7	-7	-7	-9	-15	-16	10
10000	22	14	8	10	13	6	4	-24	-17	-8	-11	-11	-15	-23	-25	11
18000	36	25	11	19	21	10	8	-42	-30	-12	-23	-23	-26	-39	-43	16

* HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**--DENOTES ANNUAL EQUIVALENT HEADWIND FOR THE INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION					
		DIPLOMA				DIPLOMA				DIPLOMA									
		JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
FORT BLISS																			
5000	TO	1	2	4	3	2	-2	-3	-2	-3	-4	-3	-4	-9	-10	8	8	1121 N.M.I.	8
10000	TO	-4	-1	2	-1	-1	-8	-9	1	0	-2	0	0	-7	-8	10	9	6	8
18000	TO	-9	-3	3	-5	-3	-14	-16	-2	-3	-6	0	-4	-13	-15	17	15	19	15
FORT BLISS																			
5000	TO	8	7	7	5	6	0	-1	-9	-8	-7	-6	-8	-15	-16	11	11	899 N.M.I.	9
10000	TO	19	15	6	9	11	4	2	-20	-16	-6	-10	-13	-22	-24	12	11	9	11
18000	TO	32	24	9	15	18	7	4	-30	-28	-9	-19	-22	-37	-40	18	17	10	16
FORT BLISS																			
5000	TO	9	7	7	6	7	1	0	-10	-8	-7	-7	-8	-15	-16	10	10	7	9
10000	TO	19	14	8	10	12	5	3	-21	-15	-8	-11	-14	-22	-24	11	11	8	10
18000	TO	31	22	12	16	18	9	6	-38	-27	-13	-21	-23	-37	-40	17	16	9	15
FORT BLISS																			
5000	TO	10	8	5	4	6	0	0	-10	-8	-5	-4	-7	-13	-14	10	9	6	8
10000	TO	22	17	4	8	12	4	2	-23	-17	-4	-9	-13	-22	-24	10	10	7	10
18000	TO	38	29	5	13	21	8	5	-41	-32	-6	-20	-24	-39	-42	15	14	8	14
FORT BLISS																			
5000	TO	11	8	7	7	8	2	1	-12	-9	-7	-7	-9	-15	-16	10	9	6	8
10000	TO	23	17	9	11	14	7	6	-25	-18	-10	-12	-16	-24	-26	10	10	7	9
18000	TO	37	25	14	20	22	12	10	-43	-30	-15	-25	-27	-40	-43	15	14	8	14
FORT BLISS																			
5000	TO	8	6	7	6	6	0	0	-9	-7	-7	-7	-8	-14	-16	10	10	7	9
10000	TO	16	12	8	9	10	4	2	-19	-14	-8	-11	-13	-21	-23	11	11	8	10
18000	TO	26	19	12	15	16	7	5	-35	-25	-14	-20	-22	-35	-38	17	16	9	15
FORT BLISS																			
5000	TO	3	2	2	3	2	-1	-2	-3	-2	-2	-3	-3	-7	-8	7	7	4	6
10000	TO	-10	-5	-1	-3	-5	-11	-13	9	4	1	2	3	-2	-4	11	9	7	9
18000	TO	-23	-16	-5	-14	-14	-26	-29	15	10	2	9	8	-1	-4	18	16	10	15
FORT BLISS																			
5000	TO	1	1	2	0	1	-3	-4	-2	-1	-2	-1	-2	-7	-8	7	7	6	7
10000	TO	-9	-3	-1	-5	-5	-10	-11	6	2	1	4	3	-1	-2	8	7	6	7
18000	TO	-16	-7	-2	-11	-9	-18	-20	7	2	0	5	2	-4	-6	13	12	9	12
FORT BLISS																			
5000	TO	14	-11	-6	-6	-9	-17	-20	13	10	6	5	8	0	-1	13	12	9	11
10000	TO	-28	-21	-8	-9	-16	-27	-30	26	20	4	8	14	4	2	14	14	10	14
18000	TO	-46	-34	-12	-25	-28	-45	-49	40	30	11	21	23	10	7	21	20	11	20

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

004--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION% IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	C U L Y A L E A T M E A D M I N D S O										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00450	A75	A45	JAN	APR	JUL	OCT	00450	A75	A45
PORT BRAGG/POPE														
5000	-12	-9	-6	-7	-9	-15	-17	11	8	5	6	7	1	0
10000	-24	-17	-8	-12	-15	-26	-26	23	16	4	11	13	6	4
18000	-42	-31	-14	-25	-27	-40	-44	37	27	15	22	23	12	10
PORT BRAGG/POPE														
5000	7	5	3	3	4	-3	-5	-9	-6	-3	-4	-4	-14	-16
10000	11	11	6	6	4	-1	-3	-10	-15	-6	-7	-11	-22	-24
18000	21	11	7	14	12	3	-3	-36	-22	-8	-20	-20	-36	-41
PORT BRAGG/POPE														
5000	-13	-13	-5	-5	-4	-15	-17	17	9	5	4	7	0	0
10000	-24	-19	-5	-8	-14	-28	-26	23	16	5	8	12	4	2
18000	-43	-32	-5	-21	-25	-43	-44	40	29	4	19	21	7	4
PORT BRAGG/POPE														
5000	-10	-8	-5	-7	-7	-13	-14	9	7	5	4	6	0	0
10000	-23	-17	-5	-9	-13	-22	-24	22	17	5	8	12	5	3
18000	-41	-17	-6	-20	-24	-49	-42	37	29	7	18	21	9	7
PORT BRAGG/POPE														
5000	-13	-10	-5	-6	-9	-17	-19	12	9	6	5	7	0	-2
10000	-26	-20	-8	-8	-15	-26	-29	24	18	8	7	13	3	1
18000	-43	-32	-12	-24	-26	-41	-37	34	27	12	19	21	8	5
PORT BRAGG/POPE														
5000	-14	-10	-6	-7	-9	-17	-19	13	9	6	6	8	1	0
10000	-26	-19	-9	-11	-16	-26	-29	24	18	9	10	14	6	4
18000	-44	-32	-14	-26	-28	-43	-37	38	27	14	22	23	11	9
PORT BRAGG/POPE														
5000	-12	-9	-4	-6	-7	-15	-17	11	8	5	3	6	-1	-2
10000	-22	-17	-5	-6	-12	-23	-25	19	15	5	5	10	1	0
18000	-40	-28	-6	-20	-22	-39	-43	34	23	6	17	18	5	3
PORT BRAGG/POPE														
5000	-13	-10	-6	-6	-9	-16	-18	12	9	6	5	7	1	0
10000	-24	-20	-7	-10	-14	-25	-28	25	19	7	9	14	5	3
18000	-45	-34	-9	-24	-27	-43	-37	41	31	9	21	23	10	8
PORT BRAGG/POPE														
5000	-13	-10	-6	-5	-9	-15	-17	12	9	6	5	7	1	0
10000	-24	-19	-6	-9	-14	-25	-27	25	19	7	9	14	5	3
18000	-44	-33	-7	-22	-24	-41	-44	41	30	7	20	22	9	6

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

--A--SHOWS ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN POUNDS	EQUIVALENT HEADWINDS																STANDARD DEVIATION			
	DIRECT				RETURN															
	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT		
FORT BRAGG/POPE 5000 10000 18000	TO 0 0 2	C 0 0 0	1 0 0	2 0 0	0 0 0	-5 -6 -7 -10	FRIDAY	-2 -6 -16	-1 -2 -6	-2 -2 -4	-4 -4 -10	-3 -4 -9	-9 -10 -19 -21	1750 N.M.I.	9 10 14	9 10 14	7 8 10 14			
FORT BRAGG/POPE 5000 10000 18000	TO 0 0 2	C 0 0 0	1 0 0	2 0 0	0 0 0	-5 -6 -7 -10	GEN MITCHELL	9 17 22	7 12 19	5 8 11	4 5 13	6 10 15	-1 1 3 0	620 N.M.I.	13 14 20	12 14 20	9 10 12 20			
FORT BRAGG/POPE 5000 10000 18000	TO 0 0 2	C 0 0 0	1 0 0	2 0 0	0 0 0	-5 -6 -7 -10	HILL AFB	8 21 34	6 14 24	4 9 15	5 11 22	5 13 22	0 -1 5 10	1590 N.M.I.	9 10 16	9 10 15	6 7 9 14			
FORT BRAGG/POPE 5000 10000 18000	TO 0 0 2	C 0 0 0	1 0 0	2 0 0	0 0 0	-5 -6 -7 -10	HUNTSVILLE	4 2 0	3 2 -1	3 2 3	1 2 3	2 2 1	-3 -5 -8 -11	585 N.M.I.	11 12 17	10 12 16	7 8 9 15			
FORT BRAGG/POPE 5000 10000 18000	TO 0 0 2	C 0 0 0	1 0 0	2 0 0	0 0 0	-5 -6 -7 -10	HUNTER AFB	7 11 19	5 9 11	3 3 5	2 3 11	4 6 10	-3 -4 0 -3	217 N.M.I.	12 14 20	12 14 20	9 9 11 19			
FORT BRAGG/POPE 5000 10000 18000	TO 0 0 2	C 0 0 0	1 0 0	2 0 0	0 0 0	-5 -6 -7 -10	JACKSONVILLE	14 27 43	10 20 32	6 7 10	5 7 22	8 14 24	-1 2 7	387 N.M.I.	13 14 20	12 14 20	9 9 11 19			
FORT BRAGG/POPE 5000 10000 18000	TO 0 0 2	C 0 0 0	1 0 0	2 0 0	0 0 0	-5 -6 -7 -10	KEY WEST	5 4 3	4 3 1	3 2 3	2 3 5	3 2 3	-2 -3 -5 -8	652 N.M.I.	10 12 16	10 11 16	7 7 9 14			
FORT BRAGG/POPE 5000 10000 18000	TO 0 0 2	C 0 0 0	1 0 0	2 0 0	0 0 0	-5 -6 -7 -10	LARSON AFB	10 21 31	7 13 21	5 10 17	7 12 23	7 13 22	2 7 13 11	1936 N.M.I.	8 9 14	6 7 9 14	8 9 13			

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00ASO--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.										STANDARD DEVIATION			
	DIRECT					RETURN					JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85
FORT BRAGG/POPE														
5000	-14	-11	-5	-5	-9	-16	-19	13	10	6	5	8	1	0
10000	-27	-20	-7	-10	-16	-26	-29	26	19	7	9	14	5	3
18000	-46	-34	-10	-24	-27	-44	-48	43	31	9	22	24	10	7
649 N.MI.														
12														
13														
19														
13														
15														
22														
331 N.MI.														
13														
15														
22														
866 N.MI.														
12														
14														
20														
1652 N.MI.														
9														
10														
15														
359 N.MI.														
14														
16														
22														
542 N.MI.														
13														
14														
20														
1425 N.MI.														
8														
9														
12														
877 N.MI.														
12														
13														
19														
1266 N.MI.														
11														
11														
17														

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*										STANDARD DEVIATION							
	DIRECT					RETURN												
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
FORT BRAGG/POPE TO NELLIS AFB																		
5000	-9	-7	-4	-4	-6	-11	-13	8	6	4	3	5	0	-1	8	8	6	7
10000	-22	-16	-7	-10	-14	-21	-23	20	15	7	9	12	5	4	10	9	7	9
18000	-40	-30	-13	-22	-25	-38	-41	35	27	12	19	21	12	9	15	14	8	13
FORT BRAGG/POPE TO NEW CUMBERLAND																		
5000	3	2	1	2	1	-6	-8	-6	-3	-1	-3	-4	-12	-14	14	13	9	12
10000	4	5	3	4	3	-5	-7	-13	-10	-4	-6	-8	-18	-21	16	15	10	14
18000	8	1	4	9	5	-7	-10	-29	-14	-6	-17	-15	-31	-35	22	22	12	21
FORT BRAGG/POPE TO NEW ORLEANS																		
5000	-12	-9	-4	-4	-7	-15	-17	11	8	4	3	6	0	-2	11	11	8	10
10000	-22	-18	-5	-7	-13	-23	-25	21	16	5	6	11	2	0	12	13	8	12
18000	-41	-30	-4	-20	-23	-39	-43	36	25	4	17	18	5	3	18	18	10	16
FORT BRAGG/POPE TO NIAGARA FALLS																		
5000	-1	-2	-1	0	-1	-9	-11	-1	0	0	-1	0	-8	-10	13	13	9	11
10000	-4	-2	-1	0	-2	-11	-13	-4	-2	0	-2	-2	-11	-14	15	15	10	14
18000	-9	-9	-2	0	-5	-18	-21	-14	-2	-1	-9	-6	-20	-23	21	21	12	21
FORT SPAGG/POPE TO OXNARD AFB																		
5000	-8	-7	-4	-3	-6	-11	-12	7	6	4	2	4	0	-1	8	7	5	7
10000	-20	-16	-6	-9	-13	-20	-22	18	15	6	9	11	5	4	9	8	6	8
18000	-39	-30	-12	-21	-25	-37	-40	34	26	12	18	21	11	9	14	13	8	12
FORT SPAGG/POPE TO PATRICK AFB																		
5000	-6	-4	-2	-1	-4	-11	-12	5	3	2	1	2	-4	-5	11	11	8	11
10000	-8	-7	-2	-2	-5	-13	-15	3	3	2	2	2	-5	-7	13	13	8	12
18000	-17	-10	-3	-9	-9	-21	-24	3	1	3	5	3	-7	-9	18	18	10	16
FORT SPAGG/POPE TO PITTSBURGH																		
5000	-4	-4	-2	-1	-3	-11	-13	1	2	2	0	1	-6	-8	14	13	9	12
10000	-10	-6	-2	-1	-5	-14	-17	1	1	1	0	0	-8	-10	15	15	10	14
18000	-17	-15	-4	-5	-10	-24	-27	-6	3	1	-4	-1	-14	-18	22	22	12	21
FORT SPAGG/POPE TO REGINA																		
5000	-11	-7	-5	-8	-8	-15	-16	10	6	5	7	6	0	0	10	10	8	9
10000	-22	-14	-11	-13	-15	-23	-24	19	12	10	11	12	5	4	10	11	8	10
18000	-36	-24	-18	-25	-25	-36	-39	27	19	15	19	19	10	7	16	15	10	15
FORT BRAGG/POPE TO SCOTT AFB																		
5000	-14	-10	-6	-6	-9	-17	-19	13	9	6	6	8	0	-1	13	12	8	11
10000	-27	-20	-9	-10	-16	-27	-30	24	18	9	9	14	5	2	14	14	10	13
18000	-44	-32	-13	-25	-27	-43	-47	37	28	13	21	23	10	7	20	20	11	19

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION			
	DIRECT						FOLLOW-UP						FEET			
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
FORT BRAGG/POPE	TO															
5000	-7	-6	-3	-2	-5	-13	-15									
10000	-15	-10	-5	-4	-9	-18	-21									
18000	-26	-20	-8	-12	-16	-30	-34									
FORT BRAGG/POPE	TO															
5000	7	5	4	5	5	-2	-4									
10000	13	12	7	8	9	0	-1									
18000	24	12	9	17	14	2	0									
FORT BRAGG/POPE	TO															
5000	-6	-5	-3	-2	-4	-12	-14									
10000	-14	-10	-6	-4	-9	-18	-20									
18000	-25	-19	-9	-12	-16	-29	-33									
FORT BRAGG/POPE	TO															
5000	-11	-7	-4	-7	-8	-13	-14									
10000	-27	-14	-10	-13	-15	-21	-23									
18000	-37	-25	-19	-27	-27	-37	-39									
FORT CAMPBELL	TO															
5000	-10	-8	-6	-7	-8	-15	-17									
10000	-23	-16	-8	-13	-15	-24	-26									
18000	-41	-29	-14	-25	-26	-40	-44									
FORT CAMPBELL	TO															
5000	14	10	6	7	8	1	0									
10000	28	20	11	10	16	7	4									
18000	45	30	15	25	26	13	10									
FORT CAMPBELL	TO															
5000	-12	-9	-6	-5	-8	-16	-18									
10000	-23	-16	-5	-9	-13	-23	-25									
18000	-40	-29	-4	-19	-22	-38	-42									
FORT CAMPBELL	TO															
5000	-8	-7	-5	-4	-6	-12	-14									
10000	-21	-16	-5	-9	-13	-21	-23									
18000	-39	-30	-8	-19	-23	-37	-40									
FORT CAMPBELL	TO															
5000	-12	-9	-6	-5	-8	-16	-18									
10000	-23	-16	-5	-9	-13	-23	-25									
18000	-40	-29	-4	-19	-22	-38	-42									
FORT CAMPBELL	TO															
5000	-8	-7	-5	-4	-6	-12	-14									
10000	-21	-16	-5	-9	-13	-21	-23									
18000	-39	-30	-8	-19	-23	-37	-40									
FORT CAMPBELL	TO															
5000	-12	-9	-6	-5	-8	-16	-18									
10000	-23	-16	-5	-9	-13	-23	-25									
18000	-40	-29	-4	-19	-22	-38	-42									
FORT CAMPBELL	TO															
5000	-8	-7	-5	-4	-6	-12	-14									
10000	-21	-16	-5	-9	-13	-21	-23									
18000	-39	-30	-8	-19	-23	-37	-40									

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT	00A50	A75	A85		
FORT CAMPBELL	TO															
5000	-9	-6	-4	-6	-7	-12	-13		5	4	6	5	0	0	8	1670 N.M.I.
10000	-20	-12	-8	-13	-13	-20	-22		19	11	8	12	5	4	10	8 6 8
18000	-35	-23	-18	-26	-25	-35	-38		30	19	16	23	21	10	15	9 7 9
FORT CAMPBELL	TO															
5000	-6	-5	-3	-2	-4	-9	-10		5	3	2	3	-1	-2	8	1640 N.M.I.
10000	-18	-13	-7	-10	-12	-19	-21		16	12	7	9	10	4	10	8 5 7
18000	-36	-27	-14	-21	-24	-35	-38		31	23	14	18	20	11	16	9 7 9
FORT CAMPBELL	TO															
5000	0	0	0	1	0	-7	-9		-2	-2	0	-1	-2	-9	13	342 N.M.I.
10000	1	2	0	1	0	-7	-9		-7	-6	0	-2	-4	-13	14	9 11
18000	-2	4	4	2	2	-9	-12		-15	-15	-4	-8	-10	-23	20	10 14
FORT CAMPBELL	TO															
5000	-12	-10	-7	-6	-9	-17	-19		11	9	7	6	8	0	13	545 N.M.I.
10000	-25	-19	-7	-12	-15	-25	-28		24	17	7	11	14	5	13	9 11
18000	-44	-32	-10	-23	-26	-42	-46		40	29	9	20	22	9	20	10 13
FORT CAMPBELL	TO															
5000	-12	-10	-7	-5	-9	-17	-19		11	9	7	5	7	0	13	570 N.M.I.
10000	-24	-17	-6	-10	-14	-24	-27		23	16	6	9	12	3	13	9 11
18000	-42	-31	-8	-21	-24	-41	-45		38	27	7	17	19	7	20	10 13
FORT CAMPBELL	TO															
5000	1	0	3	4	2	-4	-5		-3	-1	-4	-5	-4	-10	9	1764 N.M.I.
10000	3	1	2	3	2	-4	-5		-8	-3	-3	-6	-5	-12	10	8 9
18000	5	1	2	4	2	-5	-7		-17	-8	-6	-11	-11	-20	14	10 14
FORT CAMPBELL	TO															
5000	-2	-1	0	0	-1	-9	-12		0	0	0	0	0	-9	15	367 N.M.I.
10000	-4	-3	-1	-1	-3	-12	-14		-2	0	0	0	-1	-10	15	10 12
18000	-12	-8	-3	-8	-8	-21	-25		-8	-2	0	-1	-3	-16	22	11 14
FORT CAMPBELL	TO															
5000	-7	-5	-3	-5	-5	-11	-13		6	5	3	4	4	-1	9	1169 N.M.I.
10000	-20	-13	-8	-12	-13	-21	-23		19	12	8	12	12	5	11	7 8
18000	-38	-27	-16	-25	-26	-38	-41		33	23	15	22	22	11	18	10 10
FORT CAMPBELL	TO															
5000	0	0	0	0	0	-6	-8		0	-1	0	0	0	-7	11	764 N.M.I.
10000	4	4	0	1	1	-5	-7		-8	-7	0	-2	-4	-12	12	7 9
18000	8	10	2	4	5	-3	-5		-20	-18	-2	-8	-11	-23	16	8 11

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50					A75	A85
FORT CAMPBELL																		
5000	7	6	3	3	4	-2	-4	-9	-7	-3	-4	-6	-14	-16	13	12	8	11
10000	15	12	4	5	8	0	-2	-19	-15	-4	-6	-11	-21	-23	14	14	9	13
18000	22	21	7	13	14	3	0	-34	-27	-7	-17	-20	-35	-35	20	19	11	19
FORT CAMPBELL																		
5000	4	4	2	3	3	-4	-5	-5	-5	-2	-3	-4	-11	-13	12	12	8	11
10000	10	9	2	3	5	-2	-4	-15	-12	-3	-4	-9	-18	-20	13	13	9	13
18000	14	15	5	9	9	0	-3	-28	-23	-6	-14	-16	-31	-34	19	19	10	18
FORT CAMPBELL																		
5000	-2	0	-1	0	-1	-7	-9	0	0	1	0	0	-6	-7	11	10	7	9
10000	2	2	-1	0	0	-6	-8	-6	-5	1	-1	-3	-10	-12	11	11	8	11
18000	3	7	1	2	2	-6	-8	-16	-15	-1	-4	-9	-20	-23	16	16	9	14
FORT CAMPBELL																		
5000	-9	-6	-4	-7	-7	-12	-14	8	6	4	6	5	0	0	9	9	6	8
10000	-21	-12	-9	-13	-14	-21	-22	19	11	9	13	12	6	4	10	9	7	9
18000	-35	-23	-16	-26	-25	-36	-39	30	19	10	23	21	12	9	15	15	10	14
FORT CAMPBELL																		
5000	-13	-10	-6	-6	-9	-18	-20	12	9	6	5	7	0	-2	15	14	9	12
10000	-26	-18	-7	-11	-15	-27	-29	24	16	7	10	13	3	1	15	15	11	15
18000	-45	-31	-9	-23	-25	-43	-48	40	26	3	19	21	7	4	22	21	12	20
FORT CAMPBELL																		
5000	11	7	5	6	6	-1	-3	-12	-8	-5	-7	-8	-17	-19	14	14	9	12
10000	21	14	8	9	12	2	0	-24	-17	-9	-11	-15	-26	-28	15	15	11	14
18000	33	19	11	18	18	5	2	-43	-27	-13	-24	-25	-42	-46	22	22	13	21
FORT CAMPBELL																		
5000	11	7	7	8	8	1	0	-13	-8	-7	-9	-10	-17	-18	12	11	8	10
10000	21	13	11	13	14	6	4	-25	-16	-12	-15	-17	-26	-28	13	13	9	12
18000	34	19	16	23	21	10	8	-43	-26	-19	-29	-28	-42	-46	19	18	11	18
FORT CAMPBELL																		
5000	-7	-7	-5	-4	-6	-12	-13	6	4	5	3	4	0	-1	10	9	6	8
10000	-20	-16	-6	-10	-13	-21	-23	19	15	6	9	11	4	2	11	10	8	10
18000	-39	-30	-11	-20	-24	-37	-41	34	27	11	18	20	10	8	17	15	9	14
FORT CAMPBELL																		
5000	14	10	6	8	9	1	0	-15	-11	-6	-8	-10	-18	-20	13	12	8	11
10000	28	20	12	11	17	7	5	-30	-21	-12	-12	-18	-29	-32	14	14	10	13
18000	44	27	16	25	26	13	10	-50	-32	-17	-29	-30	-47	-51	20	20	11	20

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS*												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
FORT CAMPBELL TO MEMPHIS																		
5000	-12	-9	-5	-5	-8	-17	-19	11	8	5	4	6	-1	-3	15	14	10	12
10000	-24	-16	-6	-10	-14	-25	-28	21	13	6	8	11	1	0	15	15	11	15
18000	-42	-28	-8	-21	-23	-41	-45	35	21	7	16	17	4	1	23	22	12	21
FORT CAMPBELL TO MEXICO CITY																		
5000	-7	-8	-3	-1	-5	-11	-12	7	7	3	1	4	-1	-2	9	9	6	8
10000	-12	-9	-2	-3	-7	-13	-15	10	8	2	3	5	0	-2	9	9	7	9
18000	-25	-17	1	-9	-11	-24	-26	18	11	-1	6	6	-1	-3	14	13	7	12
FORT CAMPBELL TO MINN-ST PAUL																		
5000	-8	-5	-2	-5	-5	-14	-16	6	4	2	4	3	-4	-6	14	13	10	12
10000	-15	-10	-6	-9	-10	-19	-22	10	7	5	6	6	-1	-4	14	14	11	13
18000	-28	-18	-12	-20	-19	-32	-36	12	10	8	12	10	-1	-4	21	20	12	20
FORT CAMPBELL TO MINOT AFB																		
5000	-11	-6	-4	-8	-8	-15	-17	9	5	3	7	5	-1	-3	12	12	9	11
10000	-19	-12	-9	-13	-14	-22	-24	16	10	8	11	11	3	1	12	13	10	12
18000	-32	-21	-16	-24	-23	-35	-38	22	15	13	18	16	6	3	18	18	11	17
FORT CAMPBELL TO NELLIS AFB																		
5000	-7	-6	-4	-3	-5	-11	-12	6	5	4	3	4	0	-2	9	9	6	7
10000	-19	-14	-7	-10	-13	-20	-22	18	13	7	10	11	5	3	10	10	8	9
18000	-38	-28	-13	-22	-24	-37	-40	33	25	13	19	21	11	9	17	15	9	14
FORT CAMPBELL TO NEW CUMBERLAND																		
5000	13	9	6	8	8	1	0	-14	-10	-6	-8	-10	-18	-20	13	13	9	11
10000	27	19	11	11	16	6	4	-29	-21	-12	-12	-18	-29	-32	14	15	10	13
18000	43	25	15	25	25	12	9	-49	-31	-16	-29	-30	-47	-51	21	21	12	20
FORT CAMPBELL TO NEW ORLEANS																		
5000	-7	-5	-3	-1	-4	-12	-14	6	4	3	1	3	-4	-5	13	13	8	11
10000	-13	-9	-3	-3	-7	-16	-18	8	5	3	2	4	-3	-5	13	14	9	13
18000	-26	-14	1	-9	-10	-25	-29	11	4	-2	3	2	-8	-10	20	19	10	18
FORT CAMPBELL TO NIAGARA FALLS																		
5000	10	6	5	7	6	-1	-2	-12	-7	-5	-7	-8	-16	-18	14	13	9	11
10000	19	12	9	10	12	2	0	-24	-16	-10	-11	-15	-25	-28	15	15	11	14
18000	28	15	12	18	17	5	2	-41	-24	-14	-25	-25	-40	-45	21	21	12	21
FORT CAMPBELL TO OXNARD AFB																		
5000	-7	-6	-4	-2	-5	-10	-12	6	5	4	2	4	0	-2	8	8	6	7
10000	-18	-14	-6	-10	-12	-19	-21	16	13	6	9	10	4	2	10	9	7	9
18000	-37	-28	-13	-20	-23	-35	-39	32	25	12	17	19	10	8	16	14	8	13

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION			
	DIRECT						RETURN									
	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT
FORT CAMPBELL																
5000	1	2	1	2	1	-5	-7	-3	-3	-1	-2	-3	-10	-11	12	11
10000	8	7	1	2	4	-3	-5	-12	-10	-1	-3	-6	-15	-17	13	12
18000	12	13	4	7	8	-1	-4	-25	-21	-4	-12	-14	-28	-31	18	18
FORT CAMPBELL																
5000	12	8	5	7	7	0	-2	-13	-9	-5	-7	-9	-17	-19	14	13
10000	23	16	10	10	14	4	2	-27	-18	-10	-11	-16	-27	-30	15	15
18000	36	21	13	21	21	8	5	-46	-28	-15	-27	-27	-44	-49	22	22
FORT CAMPBELL																
5000	10	-6	-4	-8	-7	-15	-16	9	5	3	7	5	-1	-2	11	11
10000	-19	-12	-9	-13	-14	-21	-23	16	10	8	11	11	3	1	11	12
18000	-32	-21	-16	-24	-23	-34	-37	22	15	13	19	16	6	4	17	16
FORT CAMPBELL																
5000	10	-7	-4	-6	-7	-16	-18	8	6	4	5	5	-2	-5	15	14
10000	-20	-15	-6	-10	-13	-24	-26	16	12	6	8	10	0	-2	15	16
18000	-36	-26	-12	-22	-23	-43	-43	23	19	10	17	16	3	0	23	22
FORT CAMPBELL																
5000	6	4	3	5	4	-3	-5	-9	-5	-4	-5	-6	-14	-16	14	13
10000	12	8	6	7	9	-1	-3	-18	-12	-7	-9	-12	-21	-24	15	15
18000	16	9	7	10	9	-2	-6	-33	-18	-10	-19	-19	-34	-38	22	22
FORT CAMPBELL																
5000	12	9	5	5	7	0	-2	-13	-9	-5	-5	-8	-16	-18	13	12
10000	22	17	7	7	12	3	1	-25	-19	-7	-8	-15	-25	-28	14	14
18000	33	27	10	18	20	7	5	-42	-32	-10	-22	-25	-42	-46	21	20
FORT CAMPBELL																
5000	13	9	7	8	8	1	0	-14	-10	-7	-8	-10	-17	-19	13	12
10000	26	18	12	12	16	7	5	-29	-20	-13	-14	-19	-29	-31	14	14
18000	41	24	16	25	24	12	9	-48	-30	-18	-30	-30	-46	-50	20	20
FORT CAMPBELL																
5000	4	1	2	3	2	-5	-7	-6	-3	-3	-4	-4	-12	-14	14	13
10000	6	4	3	4	4	-5	-7	-13	-8	-5	-7	-9	-18	-20	15	15
18000	7	3	4	5	4	-7	-11	-26	-13	-8	-14	-15	-29	-33	22	21
FORT CAMPBELL																
5000	-9	-6	-4	-6	-7	-12	-13	8	6	4	6	5	0	0	9	8
10000	-21	-12	-9	-13	-14	-21	-22	19	11	8	12	12	5	4	10	9
18000	-35	-24	-18	-25	-25	-36	-39	30	20	16	23	21	12	10	15	15

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION			
	DIRECT						RETURN						JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85		
FORT CAMPBELL	TO YELLUMKNIFE															
5000	-7	-3	-2	-7	-5	-11	-13	5	2	2	6	3	-2	-3	9	1841 N.M.I.
10000	-15	-9	-9	-12	-12	-18	-19	12	7	8	10	9	3	1	9	7 9
18000	-25	-16	-13	-20	-18	-27	-30	17	11	11	14	13	5	3	13	12 9 13
FORT CARSON	TO FORT FUSTIS															
5000	11	9	7	8	8	2	1	-12	-9	-7	-8	-9	-16	-17	10	1319 N.M.I.
10000	24	16	11	12	15	7	6	-26	-18	-11	-13	-17	-25	-28	11	11 8 11
18000	40	27	17	24	25	15	12	-45	-31	-17	-27	-29	-42	-46	17	16 9 16
FORT CARSON	TO FORT HOOD															
5000	1	-1	-4	1	-1	-8	-10	-2	0	3	-1	0	-7	-9	12	575 N.M.I.
10000	10	6	0	5	4	-3	-5	-13	-8	0	-6	-7	-15	-17	12	11 8 10
18000	16	13	2	11	9	-1	-4	-27	-20	-3	-15	-15	-29	-33	20	18 10 17
FORT CARSON	TO FORT HUACHUCA															
5000	-3	-5	-4	-2	-4	-9	-10	3	5	5	2	3	0	-2	8	506 N.M.I.
10000	-7	-8	-5	-5	-7	-14	-15	5	7	5	5	5	-1	-3	12	10 9 10
18000	-21	-17	-12	-10	-15	-26	-29	11	11	11	6	9	-1	-3	20	18 11 17
FORT CARSON	TO FORT KNOX															
5000	10	8	6	7	7	0	0	-11	-8	-6	-7	-8	-15	-17	11	885 N.M.I.
10000	22	15	9	12	14	6	4	-23	-16	-9	-13	-15	-24	-26	12	12 9 12
18000	37	26	15	23	23	12	10	-41	-29	-16	-26	-27	-41	-44	19	18 10 17
FORT CARSON	TO FORT LEAVENWORTH															
5000	7	7	6	7	6	0	-2	-8	-7	-7	-7	-8	-15	-17	12	461 N.M.I.
10000	19	12	9	12	12	4	2	-20	-12	-9	-12	-13	-22	-25	14	13 10 13
18000	32	24	16	21	22	10	7	-37	-27	-16	-24	-25	-39	-43	22	20 12 19
FORT CARSON	TO FORT LEWIS															
5000	0	0	0	0	0	-5	-6	0	0	0	0	0	-4	-6	8	928 N.M.I.
10000	-15	-8	-5	-8	-9	-16	-18	14	8	5	7	8	1	0	11	10 8 10
18000	-29	-19	-14	-22	-21	-33	-36	25	15	12	18	16	5	3	19	17 12 17
FORT CARSON	TO FORT ORD															
5000	-1	-2	0	2	0	-5	-6	2	2	0	-1	0	-4	-5	8	815 N.M.I.
10000	-12	-9	-6	-8	-9	-16	-18	11	8	6	7	7	1	0	12	11 8 10
18000	-29	-23	-15	-18	-21	-33	-36	25	20	15	15	18	7	4	20	18 11 16
FORT CARSON	TO FORT RUCKER															
5000	7	5	3	5	4	-1	-3	-8	-6	-3	-5	-6	-12	-14	11	1048 N.M.I.
10000	18	13	4	9	10	2	1	-20	-14	-4	-10	-12	-21	-23	11	11 8 11
18000	30	24	9	18	18	8	6	-37	-29	-9	-21	-23	-37	-40	17	16 9 15

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EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION			
	DIRECT					RETURN					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	A75	A85	JAN	APR	JUL	OCT	A50	A75	A85	
FORT CARSON	TO													
5000	3	1	0	3	1	-7	-4	-2	0	-3	-2	-10	-12	390 N.M.I.
10000	15	10	3	8	0	-1	-17	-11	-3	-9	-10	-19	-21	12 12 9 11
18000	25	19	8	16	15	4	-32	-24	-9	-19	-20	-34	-38	13 13 10 12
FORT CARSON	TO													22 19 11 18
5000	2	0	-2	1	0	-9	-3	0	2	-2	-1	-8	-10	481 N.M.I.
10000	12	7	1	6	6	-4	-14	-9	-1	-7	-8	-17	-19	12 12 9 10
18000	20	15	4	13	11	0	-29	-22	-6	-17	-17	-32	-35	13 12 10 12
FORT CARSON	TO													21 18 11 18
5000	2	1	4	4	2	-4	-3	-2	-5	-6	-4	-10	-12	1975 N.M.I.
10000	4	2	5	4	3	-1	-7	-3	-6	-6	-6	-12	-13	8 8 8 9
18000	7	5	7	6	6	-1	-15	-10	-11	-12	-12	-20	-22	8 9 8 8
FORT CARSON	TO													13 12 9 12
5000	8	7	7	7	7	-1	-9	-7	-7	-8	-8	-15	-17	804 N.M.I.
10000	18	11	10	12	12	4	-20	-12	-11	-13	-14	-23	-25	11 12 9 10
18000	30	22	18	21	21	10	-37	-26	-19	-25	-26	-39	-42	13 13 10 12
FORT CARSON	TO													20 19 11 18
5000	1	2	3	4	2	-3	-1	-2	-3	-4	-3	-8	-9	362 N.M.I.
10000	-13	-8	-5	-9	-16	-18	13	8	5	9	8	1	0	7 8 6 7
18000	-30	-21	-14	-21	-34	-38	26	18	12	18	17	5	2	12 10 9 10
FORT CARSON	TO													22 20 12 19
5000	3	3	0	2	1	-4	-4	-4	0	-3	-3	-9	-10	1464 N.M.I.
10000	13	10	1	6	7	0	-16	-11	-1	-7	-9	-16	-18	9 9 6 8
18000	25	21	5	13	14	5	-32	-26	-5	-16	-19	-31	-34	10 9 7 9
FORT CARSON	TO													14 13 8 12
5000	9	7	4	5	5	-1	-9	-7	-4	-5	-7	-13	-14	1220 N.M.I.
10000	20	15	6	9	11	4	-22	-16	-6	-10	-13	-22	-24	10 10 7 9
18000	33	26	10	19	20	9	-39	-30	-10	-22	-24	-38	-42	11 11 8 10
FORT CARSON	TO													17 16 9 15
5000	9	7	5	6	6	0	-10	-8	-5	-6	-8	-15	-16	897 N.M.I.
10000	21	15	6	11	12	4	-22	-16	-7	-12	-14	-23	-25	11 11 8 10
18000	34	26	11	21	21	10	-40	-30	-12	-24	-25	-40	-43	12 12 9 12
FORT CARSON	TO													19 17 10 17
5000	7	6	3	5	5	0	-8	-7	-3	-5	-6	-12	-14	1241 N.M.I.
10000	18	13	4	8	10	3	-20	-15	-4	-9	-12	-20	-22	10 10 7 9
18000	31	25	9	18	19	6	-37	-29	-9	-21	-23	-36	-40	11 10 8 10
FORT CARSON	TO													16 15 9 14

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION	
	DIRECT						RETURN							
	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT	MAY	AUG		
FORT CARSON														
5000	TO	JUNEAU					0	0	0	0	0	0	0	1650 N.M.I.
10000	TO	JUNEAU					11	6	4	6	6	0	0	7 5 7
18000	TO	JUNEAU					19	9	7	13	11	2	0	10 8 7 8
FORT CARSON														
5000	TO	KEY WEST					-3	-3	0	-2	-2	-8	-9	1441 N.M.I.
10000	TO	KEY WEST					-14	-10	0	-6	-8	-15	-17	9 9 6 8
18000	TO	KEY WEST					-30	-24	-4	-15	-17	-30	-32	14 13 7 12
FORT CARSON														
5000	TO	LARSON AFB					0	0	0	0	0	-5	-7	816 N.M.I.
10000	TO	LARSON AFB					14	8	4	8	8	1	0	8 6 8
18000	TO	LARSON AFB					24	14	10	17	15	4	1	11 10 8 10
FORT CARSON														
5000	TO	LITTLE ROCK					-8	-6	-4	-6	-6	-14	-16	646 N.M.I.
10000	TO	LITTLE ROCK					-21	-14	-6	-11	-13	-22	-24	12 12 9 10
18000	TO	LITTLE ROCK					-38	-28	-11	-23	-24	-39	-42	13 12 10 12
FORT CARSON														
5000	TO	LOCKPORT					-11	-9	-7	-8	-9	-16	-17	1015 N.M.I.
10000	TO	LOCKPORT					-24	-16	-11	-14	-16	-25	-27	11 11 8 9
18000	TO	LOCKPORT					-43	-29	-18	-27	-28	-42	-45	12 12 9 11
FORT CARSON														
5000	TO	LORING AFB					-11	-7	-8	-9	-9	-15	-17	1680 N.M.I.
10000	TO	LORING AFB					-22	-13	-13	-16	-16	-24	-25	10 10 7 9
18000	TO	LORING AFB					-38	-25	-22	-28	-28	-39	-41	11 11 8 10
FORT CARSON														
5000	TO	LUKE AFB					2	4	3	0	2	-2	-3	482 N.M.I.
10000	TO	LUKE AFB					8	8	6	6	6	0	-1	8 8 5 7
18000	TO	LUKE AFB					18	16	14	10	14	3	0	13 10 9 10
FORT CARSON														
5000	TO	MCGUIRE AFB					-13	-10	-7	-9	-10	-16	-18	1395 N.M.I.
10000	TO	MCGUIRE AFB					-26	-18	-12	-14	-17	-25	-28	10 10 7 9
18000	TO	MCGUIRE AFB					-45	-30	-19	-29	-30	-43	-46	11 11 8 10
FORT CARSON														
5000	TO	MEMPHIS					-9	-7	-5	-6	-7	-14	-16	741 N.M.I.
10000	TO	MEMPHIS					-21	-15	-6	-12	-14	-23	-25	12 12 10 12
18000	TO	MEMPHIS					-39	-29	-12	-23	-24	-39	-43	20 18 10 17

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION				
	DIRECT						RETURN										
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC					
FORT CARSON														1192 N.M.I.			
5000	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	9	8	5	8
10000	-6	-7	-8	-3	-7	-12	-13	5	7	8	3	3	6	0	0	0	0
18000	-1	-1	-3	0	-2	-7	-9	-1	0	3	0	0	0	-5	-6	-7	8
	-1	0	-3	0	-2	-9	-11	-7	-6	3	-3	-3	-2	-12	-14	14	13
FORT CARSON														636 N.M.I.			
5000	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	11	12	9	11
10000	4	5	7	5	5	-2	-3	-5	-6	-7	-6	-6	-7	-14	-16	13	13
18000	12	6	9	8	8	0	-1	-15	-8	-10	-10	-10	-11	-19	-22	20	19
	20	16	15	15	16	5	2	-28	-21	-17	-21	-21	-22	-34	-37	12	12
FORT CARSON														594 N.M.I.			
5000	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	11	11	9	11
10000	0	1	4	1	1	-5	-7	0	-2	-4	-2	-2	-3	-10	-11	12	12
18000	-2	-1	3	-1	0	-8	-10	-1	0	-4	0	0	-2	-10	-12	20	19
	-4	0	4	-2	0	-12	-15	-7	-6	-9	-5	-5	-8	-19	-22	12	12
FORT CARSON														510 N.M.I.			
5000	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	7	7	5	7
10000	-1	-2	0	2	-1	-5	-6	1	2	1	-2	-2	0	-4	-5	12	10
18000	-12	-9	-7	-8	-9	-16	-18	11	9	7	8	8	8	1	0	21	19
	-29	-23	-16	-17	-21	-33	-37	24	20	15	15	15	17	6	3	9	10
FORT CARSON														1291 N.M.I.			
5000	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	11	10	7	9
10000	11	9	7	8	8	2	0	-12	-9	-7	-9	-9	-10	-16	-18	11	10
18000	24	16	12	13	15	8	6	-26	-17	-12	-14	-14	-17	-26	-28	11	11
	39	26	19	24	25	15	12	-44	-30	-19	-28	-28	-29	-42	-46	17	17
FORT CARSON														893 N.M.I.			
5000	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	11	11	8	9
10000	4	3	0	3	2	-4	-5	-5	-6	-1	-4	-4	-4	-11	-12	11	11
18000	15	10	1	7	7	0	-1	-17	-12	-2	-8	-8	-10	-18	-20	18	16
	25	21	6	15	15	4	2	-33	-26	-6	-18	-18	-20	-34	-37	9	9
FORT CARSON														1195 N.M.I.			
5000	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	11	11	8	9
10000	10	7	7	8	7	1	0	-11	-8	-7	-9	-9	-9	-16	-17	12	12
18000	21	13	12	13	14	6	5	-23	-15	-12	-15	-15	-16	-24	-27	18	17
	35	23	19	23	23	13	11	-41	-27	-20	-27	-27	-28	-40	-44	10	10
FORT CARSON														739 N.M.I.			
5000	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	7	7	5	6
10000	-2	-3	-1	2	-1	-6	-7	2	3	2	-2	-2	1	-3	-4	12	10
18000	-10	-9	-6	-7	-8	-15	-17	9	8	6	7	7	7	0	0	20	18
	-28	-23	-15	-16	-20	-32	-35	23	19	14	13	13	16	6	3	11	11
FORT CARSON														1356 N.M.I.			
5000	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	9	9	7	8
10000	5	5	2	4	3	-1	-3	-6	-5	-2	-4	-4	-5	-10	-12	10	10
18000	16	12	3	7	9	2	0	-18	-13	-3	-8	-8	-10	-18	-20	15	14
	29	24	7	16	17	7	5	-35	-28	-7	-19	-19	-21	-34	-37	8	8

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION					
		DIRECT				RETURN													
		JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT	**A50	A75	A85	JAN	APR	JUL	OCT
FORT CARSON																			
5000	TO	11	8	8	8	1	0	0	-12	-9	-7	-9	-10	-16	-18	11	11	8	9
10000	1	13	15	7	5				-25	-16	-11	-14	-16	-25	-27	12	12	9	11
18000	38	25	16	24	14	11	11	11	-43	-29	-19	-28	-29	-42	-45	18	17	10	17
FORT CARSON																			
5000	TO	-1	0	2	0	0	-6	-8	0	-1	-3	-1	-2	-8	-10	10	10	8	10
10000	-7	-3	0	-4	-4	-11	-13	-13	3	2	-1	2	1	-6	-7	11	11	9	11
18000	-13	-5	0	-9	-7	-19	-22	-22	2	0	-4	1	-1	-12	-14	19	18	12	17
FORT CARSON																			
5000	TO	9	7	6	7	7	0	-1	-10	-8	-6	-7	-8	-15	-17	12	12	9	10
10000	21	13	9	12	13	5	2	2	-22	-14	-9	-13	-15	-24	-26	13	13	10	12
18000	35	25	16	22	23	11	9	9	-40	-28	-16	-25	-26	-40	-44	20	19	11	18
FORT CARSON																			
5000	TO	9	7	7	8	7	1	0	-10	-8	-7	-8	-9	-15	-17	11	11	8	10
10000	21	13	11	13	14	6	4	4	-22	-14	-12	-14	-16	-24	-26	12	12	9	11
18000	34	23	19	22	23	12	10	10	-40	-27	-20	-27	-28	-40	-44	19	18	11	17
FORT CARSON																			
5000	TO	10	8	5	6	7	1	0	-11	-8	-5	-6	-8	-14	-16	10	10	7	9
10000	22	16	7	10	13	5	3	3	-23	-17	-7	-11	-14	-23	-25	11	11	8	11
18000	36	27	12	21	22	11	9	9	-41	-31	-12	-24	-26	-40	-43	17	16	9	15
FORT CARSON																			
5000	TO	11	8	8	9	8	2	1	-12	-9	-8	-9	-10	-16	-18	10	10	7	9
10000	23	15	12	14	15	8	6	6	-25	-17	-13	-15	-18	-25	-27	11	11	8	10
18000	37	25	20	24	25	15	13	13	-43	-29	-21	-29	-30	-42	-45	17	16	10	15
FORT CARSON																			
5000	TO	8	6	7	8	7	0	-1	-10	-7	-7	-8	-8	-15	-17	11	11	8	10
10000	19	11	11	12	13	5	3	3	-21	-12	-12	-14	-15	-23	-25	12	12	9	11
18000	30	21	18	21	21	11	8	8	-37	-25	-20	-25	-26	-38	-42	19	18	11	17
FORT CARSON																			
5000	TO	0	0	0	0	0	-5	-6	0	0	0	0	0	-5	-6	8	8	6	7
10000	-15	-8	-5	-9	-9	-16	-18	-18	14	8	5	8	8	1	0	11	10	8	10
18000	-29	-19	-14	-22	-21	-33	-36	-36	24	15	11	18	16	5	2	19	18	12	17
FORT CARSON																			
5000	TO	-2	0	0	-2	-1	-7	-8	1	0	-1	1	0	-5	-7	9	8	7	9
10000	-11	-5	-4	-8	-7	-13	-15	-15	9	4	3	7	5	0	-1	9	8	7	8
18000	-19	-9	-6	-14	-12	-21	-24	-24	11	4	2	8	5	-2	-4	14	13	10	13

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 **A---DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GAFAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWIND IN D.S.														STANDARD DEVIATION				
		DIRECT							RETURN											
		JAN	APR	JUL	OCT	00ASU	A75	A85	JAN	APR	JUL	OCT	00ASU	A75	A85					
FORT EUSTIS																				
TC		FORT MOOD																		
5000	-13	-10	-6	-5	-9	-15	-17	12	9	6	5	7	1	C	1113 N.M.I.					
10000	-26	-19	-7	-10	-15	-25	-27	24	18	7	9	13	5	3	11 10 7 9					
18000	-45	-32	-8	-23	-26	-42	-45	40	27	7	20	21	9	6	11 11 8 11 17 16 9 16					
TC		FORT MUACHUCA																		
5000	-10	-8	-6	-5	-8	-13	-15	9	8	6	5	6	1	0	1696 N.M.I.					
10000	-24	-18	-7	-17	-15	-23	-25	22	17	7	9	13	6	4	5 9 6 6					
18000	-42	-31	-11	-22	-25	-39	-42	38	28	11	19	22	11	9	10 9 7 9 15 14 8 13					
TC		FORT KNICK																		
5000	-15	-11	-7	-8	-10	-16	-17	15	11	7	7	9	1	0	442 N.M.I.					
10000	-30	-22	-12	-12	-19	-30	-31	27	21	12	11	17	7	5	14 13 9 11 15 15 10 14					
18000	-50	-34	-17	-29	-31	-46	-47	44	30	15	24	27	14	11	21 21 12 20					
TC		FORT LEAVE-JAMES																		
5000	-15	-11	-7	-9	-11	-16	-20	14	10	7	4	9	2	0	858 N.M.I.					
10000	-29	-20	-12	-13	-18	-28	-31	27	19	17	12	16	8	6	12 12 8 10 13 13 10 12					
18000	-49	-33	-16	-29	-31	-46	-50	44	29	17	25	26	14	12	19 19 11 18					
TC		FORT SUCKER																		
5000	-11	-8	-4	-4	-7	-14	-16	10	7	4	3	5	-1	-3	600 N.M.I.					
10000	-21	-17	-6	-7	-13	-22	-25	18	14	6	6	10	2	0	12 11 8 11 15 13 9 13					
18000	-40	-27	-8	-21	-22	-39	-42	31	19	7	17	16	5	2	19 19 10 18					
TC		FORT SILL																		
5000	-14	-10	-7	-7	-10	-17	-18	13	10	7	7	8	2	0	1070 N.M.I.					
10000	-27	-20	-9	-11	-17	-26	-29	26	19	9	11	15	7	5	11 11 8 9 12 12 9 11					
18000	-47	-33	-13	-26	-28	-44	-48	42	29	12	22	24	12	9	18 17 10 16					
TC		FORT WILKENS																		
5000	-13	-10	-6	-6	-9	-16	-17	12	10	6	6	8	1	0	1095 N.M.I.					
10000	-27	-19	-8	-11	-16	-25	-28	25	18	4	10	14	6	4	11 11 7 9 12 12 8 11					
18000	-46	-32	-11	-24	-27	-42	-46	42	28	10	21	23	11	8	15 16 9 16					
TC		FORT FISHER																		
5000	0	0	1	2	0	-4	-7	-1	-1	-2	-3	-2	-9	-10	1564 N.M.I.					
10000	0	0	0	1	0	-6	-1	-5	-2	-2	-4	-4	-10	-12	10 10 9 9 11 11 8 10					
18000	2	0	0	1	0	-9	-11	-15	-6	-4	-10	-9	-19	-22	15 15 11 15					
TC		FORT MITCHELL																		
5000	-14	-10	-7	-8	-10	-16	-17	12	9	7	7	8	0	-1	585 N.M.I.					
10000	-28	-19	-13	-12	-18	-28	-31	25	17	15	11	14	4	4	14 13 9 11 15 15 11 13					
18000	-46	-31	-19	-27	-29	-45	-48	37	26	18	21	24	11	8	21 21 12 20					

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00ASU--DEMOY'S ANNUAL EQUIVALENT HEADWINDS FOR INDICATED AIRSPEEDS.

MINUS SPEC. DEMOY'S HEADWINDS.

EQUIVALENT WEATHERS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

[illegible]

ONEAD1405--COMPUTED FOR A 120-CT ALIEN SET.

THIS TABLE PRESENTS THE ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
ANNUAL EQUIVALENT HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATIONS IN GROUPS FOR OFFSET CIRCLE AND ROUTES

OFFICE IN FEET	EQUIVALENT HEADINGS AND STANDARD DEVIATIONS IN GROUPS FOR OFFSET CIRCLE AND ROUTES												STANDARD DEVIATION			
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	APR	JUL	OCT
PORT FUSTIS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	7	5	5	5	5	5	5	5	5	5	5	5	14	13	10	11
10000	13	10	8	10	10	10	10	10	10	10	10	10	16	15	10	13
18000	24	12	11	10	15	15	15	15	15	15	15	15	22	21	13	20
PORT FUSTIS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	8	5	5	5	5	5	5	5	5	5	5	9	8	6	7
10000	23	17	8	10	10	10	10	10	10	10	10	10	10	9	7	9
18000	37	31	14	23	26	26	26	26	26	26	26	26	15	14	8	13
PORT FUSTIS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	15	11	8	10	10	10	10	10	10	10	10	10	13	12	8	11
10000	24	21	10	11	17	17	17	17	17	17	17	17	14	14	9	13
18000	44	39	12	23	24	24	24	24	24	24	24	24	20	19	11	19
PORT FUSTIS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	8	7	2	2	2	2	2	2	2	2	2	2	8	8	5	7
10000	15	12	3	3	3	3	3	3	3	3	3	3	9	9	6	8
18000	31	22	1	1	1	1	1	1	1	1	1	1	12	12	7	11
PORT FUSTIS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	14	9	7	7	7	7	7	7	7	7	7	7	12	12	9	11
10000	24	18	14	14	14	14	14	14	14	14	14	14	13	14	10	12
18000	44	29	12	23	24	24	24	24	24	24	24	24	20	19	12	15
PORT FUSTIS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	13	8	6	6	6	6	6	6	6	6	6	6	11	11	8	10
10000	22	14	13	13	13	13	13	13	13	13	13	13	11	12	9	11
18000	33	22	14	19	22	23	23	23	23	23	23	23	17	17	11	16
PORT FUSTIS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	6	7	5	5	5	5	5	5	5	5	5	5	4	4	6	7
10000	20	15	9	11	13	13	13	13	13	13	13	13	10	10	7	9
18000	36	26	16	21	23	23	23	23	23	23	23	23	15	14	8	13
PORT FUSTIS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	11	8	6	6	6	6	6	6	6	6	6	6	11	11	8	10
10000	20	16	6	7	11	13	13	13	13	13	13	13	10	12	8	12
18000	34	22	4	17	17	17	17	17	17	17	17	17	16	17	10	16
PORT FUSTIS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	4	4	3	3	3	3	3	3	3	3	3	3	15	14	10	12
10000	6	4	4	4	4	4	4	4	4	4	4	4	16	16	11	14
18000	3	3	3	3	3	3	3	3	3	3	3	3	23	23	13	22

HEADINGS--COMPUTED FOR A 120-DEGREE ARC.
 HEADINGS--ANNUAL EQUIVALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN INDICATES HEADINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR UP-FAT CIRCLE AIR ROUTES

WIND IN FEET	EQUIVALENT HEADWINDS IN KNOTS FOR UP-FAT CIRCLE AIR ROUTES												STANDARD DEVIATION
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	
FOOT FUSTIS	10	10	10	10	10	10	10	10	10	10	10	10	
5000	-12	-9	-6	-3	-2	-1	11	9	6	2	1	2	626 N.M.I.
10000	-11	-9	-5	-3	-2	-1	5	6	3	3	3	4	11 11 8 11
15000	-10	-8	-4	-2	-1	-1	5	6	3	3	3	4	13 13 8 12
20000	-9	-7	-3	-1	-1	-1	8	4	3	3	3	5	18 18 10 16
FOOT FUSTIS	10	10	10	10	10	10	11	9	6	2	1	2	219 N.M.I.
5000	-13	-10	-6	-3	-2	-1	11	15	10	7	5	7	15 14 10 12
10000	-12	-9	-5	-3	-2	-1	22	15	10	7	5	13	16 16 11 15
15000	-11	-8	-4	-2	-1	-1	30	24	14	14	19	6	23 23 13 22
20000	-10	-7	-3	-1	-1	-1	31	21	19	21	22	13	1400 N.M.I.
FOOT FUSTIS	10	10	10	10	10	10	11	9	6	2	1	2	629 N.M.I.
5000	-12	-9	-6	-3	-2	-1	14	10	7	5	3	9	13 12 9 11
10000	-11	-8	-4	-2	-1	-1	29	20	12	12	17	8	14 14 10 13
15000	-10	-7	-3	-1	-1	-1	45	30	17	25	27	14	20 20 12 20
20000	-9	-6	-2	-1	-1	-1	10	8	6	5	7	1	390 N.M.I.
FOOT FUSTIS	10	10	10	10	10	10	10	8	6	5	3	4	312 N.M.I.
5000	-12	-9	-6	-3	-2	-1	10	14	10	7	5	7	13 12 9 12
10000	-11	-8	-4	-2	-1	-1	20	14	10	7	5	8	14 16 11 14
15000	-10	-7	-3	-1	-1	-1	28	22	14	14	18	5	22 22 13 22
20000	-9	-6	-2	-1	-1	-1	8	6	3	3	4	2	307 N.M.I.
FOOT FUSTIS	10	10	10	10	10	10	10	8	6	5	3	4	486 N.M.I.
5000	-12	-9	-6	-3	-2	-1	11	17	10	7	5	7	14 13 9 11
10000	-11	-8	-4	-2	-1	-1	22	17	10	7	5	10	15 15 11 14
15000	-10	-7	-3	-1	-1	-1	40	23	14	14	15	2	22 22 13 21
20000	-9	-6	-2	-1	-1	-1	8	7	5	4	5	1	1984 N.M.I.
FOOT FUSTIS	10	10	10	10	10	10	11	7	5	3	7	7	8 8 6 8
5000	-12	-9	-6	-3	-2	-1	22	13	12	13	14	8	9 9 7 9
10000	-11	-8	-4	-2	-1	-1	33	22	20	24	24	15	14 14 9 13
15000	-10	-7	-3	-1	-1	-1							
20000	-9	-6	-2	-1	-1	-1							

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 --DEVIATIONS ARE EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN DEVIATES HEADWINDS.

FOUR VALVES AND STANDARD DEVIATION IN ROUTES FOR GREAT CIRCLE AIR ROUTES

[illegible]

RELIABILITY--COMPUTED AND A 120-AT ASSIGNED.
CONFIDENCE--GENERAL EVALUATION READING AND INDICATED PER CENT RELIABILITY.
REMARKS--SOME READING READING.

PERCENTAGE HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

STATION IN FLY	PERCENTAGE HEADWINDS												STANDARD DEVIATION			
	PERCENTAGE HEADWINDS												STANDARD DEVIATION			
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
MONTGOMERY																
5000	1	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0
10000	11	9	1	4	5	1	1	1	1	1	1	1	1	1	1	1
15000	25	23	2	11	13	1	1	1	1	1	1	1	1	1	1	1
MONTGOMERY																
5000	10	6	4	4	6	0	0	0	0	0	0	0	0	0	0	0
10000	21	14	3	7	11	2	0	0	0	0	0	0	0	0	0	0
15000	37	29	1	17	19	5	2	2	2	2	2	2	2	2	2	2
MONTGOMERY																
5000	11	7	6	4	7	0	0	0	0	0	0	0	0	0	0	0
10000	27	16	4	4	11	2	0	0	0	0	0	0	0	0	0	0
15000	37	27	2	17	19	4	1	1	1	1	1	1	1	1	1	1
MONTGOMERY																
5000	8	7	3	4	5	1	0	0	0	0	0	0	0	0	0	0
10000	19	14	2	6	9	1	0	0	0	0	0	0	0	0	0	0
15000	35	29	0	16	19	4	1	1	1	1	1	1	1	1	1	1
MONTGOMERY																
5000	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10000	10	6	2	3	4	0	0	0	0	0	0	0	0	0	0	0
15000	27	21	2	10	11	0	0	0	0	0	0	0	0	0	0	0
MONTGOMERY																
5000	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
10000	14	8	2	3	4	0	0	0	0	0	0	0	0	0	0	0
15000	24	19	0	10	11	0	0	0	0	0	0	0	0	0	0	0
MONTGOMERY																
5000	10	4	7	4	7	0	0	0	0	0	0	0	0	0	0	0
10000	14	4	4	6	10	1	0	0	0	0	0	0	0	0	0	0
15000	30	21	2	12	14	1	0	0	0	0	0	0	0	0	0	0
MONTGOMERY																
5000	11	4	5	4	7	0	0	0	0	0	0	0	0	0	0	0
10000	21	15	6	4	12	1	0	0	0	0	0	0	0	0	0	0
15000	34	22	7	16	18	6	3	3	3	3	3	3	3	3	3	3
MONTGOMERY																
5000	11	7	7	7	7	2	0	0	0	0	0	0	0	0	0	0
10000	21	14	9	11	13	6	4	4	4	4	4	4	4	4	4	4
15000	33	20	12	23	19	10	7	7	7	7	7	7	7	7	7	7

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.
 PERCENTAGE ANNUAL FOUR VALUED HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 PLUS SIGN GRANTES HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN CUTS FOR GREAT CIRCLE AIR ROUTES

STATION IN CELL	CURRENT MEASUREMENTS										STANDARD DEVIATION			
	OBSERVATION				RETURN									
	JAN	FEB	JUL	DEC	JAN	FEB	JUL	DEC	JAN	APR	JUL	OCT		
PORT MANN														
9000	-3	-2	1	0	-1	-7	-8		2	1	-1	0		
10000	-10	-17	0	-6	-9	-17	-19		15	11	0	5		
18000	-34	-28	-3	-14	-19	-34	-37		30	25	2	14		
PORT MANN														
9000	12	4	3	2	1	1	0		-13	-10	-5	-6		
12000	24	17	6	2	11	6	4		-26	-19	-3	-10		
18000	60	26	4	20	21	10	7		-45	-31	-10	-24		
PORT MANN														
9000	10	8	7	7	7	0	-2		-11	-9	-7	-5		
12000	21	15	4	7	11	2	0		-22	-16	-4	-8		
18000	34	24	1	14	16	2	0		-39	-29	-2	-18		
PORT MANN														
9000	-7	-9	-6	-1	-4	-12	-14		7	9	4	1		
12000	-7	-5	-2	-2	-4	-13	-12		6	5	2	1		
18000	-11	-8	-2	-4	-6	-15	-17		7	5	2	3		
PORT MANN														
9000	1	2	3	0	2	-5	-7		-3	-4	-5	-1		
12000	2	2	2	0	1	-6	-7		-7	-5	-3	-2		
18000	6	1	2	-1	3	-10	-12		-16	-11	-5	-6		
PORT MANN														
9000	-4	3	2	-9	-1	-8	-10		2	0	-3	2		
10000	-8	-4	0	-6	-5	-12	-14		3	2	0	3		
18000	-15	-9	-3	-11	-9	-20	-23		1	1	0	4		
PORT MANN														
9000	-2	-1	1	1	0	-5	-7		1	1	-1	-1		
10000	-15	-11	-1	-4	-4	-14	-18		14	11	1	4		
18000	-32	-26	-6	-16	-19	-34	-36		28	23	5	14		
PORT MANN														
9000	12	7	6	6	7	1	0		-13	-10	-6	-6		
12000	24	17	6	9	13	5	4		-26	-18	-8	-10		
18000	38	25	6	19	20	9	6		-44	-30	-10	-24		
PORT MANN														
9000	8	5	2	3	4	-2	-4		-9	-6	-2	-4		
12000	18	13	0	4	8	0	-2		-19	-14	3	-7		
18000	33	27	-2	15	17	1	-1		-36	-30	2	-17		

[illegible]

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET		EQUIVALENT WIND M E A D M I N D S O RETURN												STANDARD DEVIATION							
		JAN	APR	JUL	OCT	0050	075	A05	JAN	APR	JUL	OCT	0050					075	A05		
PORT MONROE		NIAGARA FALLS																1139 N.M.I.			
5000	10	7	6	6	7	0	0										11	11	7	9	
10000	20	14	8	9	12	4	2										12	12	9	11	
18000	31	19	9	16	17	6	4										17	17	10	16	
PORT MONROE		WESSTOWN AFB																1100 N.M.I.			
5000	22	17	0	1	1	-3	-7										8	8	5	7	
10000	14	11	-1	-6	-8	-15	-17										11	9	7	9	
18000	32	27	-3	-15	-19	-37	-36										17	15	9	14	
PORT MONROE		CATALPA AFB																900 N.M.I.			
5000	5	4	1	1	3	-2	-4										10	10	7	9	
10000	14	11	1	4	7	0	-1										11	11	7	10	
18000	31	27	0	14	16	3	0										15	15	8	13	
PORT MONROE		PITTSBURGH																1011 N.M.I.			
5000	11	8	6	6	7	1	0										12	11	7	9	
10000	22	15	7	9	12	4	2										12	12	9	11	
18000	35	23	8	17	18	7	5										18	17	10	16	
PORT MONROE		REGINA																1201 N.M.I.			
5000	4	-1	1	-3	-2	-9	-10										10	10	8	10	
10000	10	-5	-1	-7	-6	-13	-15										10	10	8	10	
18000	19	-11	-5	-13	-12	-22	-25										17	15	10	15	
PORT MONROE		SCOTT AFB																580 N.M.I.			
5000	9	7	7	4	6	-1	-3										13	13	9	11	
10000	16	11	5	6	9	0	-1										13	13	10	13	
18000	24	16	5	10	12	1	-1										20	18	10	18	
PORT MONROE		SELFRIDGE AFB																984 N.M.I.			
5000	9	7	6	5	6	3	-1										12	11	8	10	
10000	18	12	7	8	10	3	1										12	12	9	11	
18000	27	17	8	13	14	4	1										18	17	10	17	
PORT MONROE		SWAN AFB																880 N.M.I.			
5000	11	9	5	4	6	0	-1										11	11	7	9	
10000	23	17	4	7	11	3	1										12	11	8	11	
18000	39	29	3	16	20	6	4										17	16	9	15	
PORT MONROE		WESSTOWN AFB																1368 N.M.I.			
5000	12	9	7	6	8	2	0										11	10	7	9	
10000	22	17	9	10	14	6	5										11	11	8	10	
18000	34	24	11	20	21	10	8										16	16	9	15	

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.
 004—DIFFERENCE ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN DEDUITS HEADWINDS.

FOR THE AIR ROUTES

STATION IN REF.	DATE												STANDARD DEVIATION																											
	JAN				FEB				MAR				APR				MAY				JUN				JUL				AUG				SEPT				OCT			
	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980									
STATION																																								
IN																																								
REF.																																								
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980										
1950	1951	1952	1953</																																					

UNITED STATES GOVERNMENT
OFFICE OF THE SECRETARY OF THE ARMY
WASHINGTON, D. C. 20315

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	DIRECTION												RETURN					STANDARD DEVIATION				
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	JAN	APR	JUL	OCT
PORT MURCHUCA																						
500	4	1	0	0	2	-3	-5	-4	-4	-1	-1	-3	-9	-10	10	10	6	9	627	N.M.I.		
1000	17	13	1	6	0	0	-1	-17	-14	-1	-6	-9	-18	-20	12	10	6	11				
18000	32	27	4	14	17	5	2	-35	-29	-4	-16	-20	-35	-39	19	16	10	16				
PORT MURCHUCA																						
500	6	6	6	6	5	0	-1	-7	-7	-6	-5	-7	-12	-14	10	9	7	8	1259	N.M.I.		
1000	15	11	7	9	10	3	1	-17	-13	-6	-10	-12	-19	-21	11	10	8	10				
18000	26	20	12	14	16	7	5	-33	-25	-14	-19	-22	-34	-37	17	16	9	15				
PORT MURCHUCA																						
500	4	5	4	3	4	3	0	-4	-4	-4	-3	-4	-8	-9	7	6	4	6	577	N.M.I.		
1000	-4	0	3	0	0	-7	-9	2	0	-3	0	-1	-7	-9	12	10	8	10				
18000	-11	-6	5	-5	-3	-16	-20	0	0	-7	0	-3	-13	-16	20	18	11	17				
PORT MURCHUCA																						
500	1	2	-1	0	0	-4	-5	-2	-2	1	0	-1	-6	-7	8	7	5	7	1615	N.M.I.		
1000	13	10	-1	4	0	0	-2	-14	-10	1	-4	-7	-14	-16	8	8	6	8				
18000	27	24	-1	11	14	2	0	-31	-26	1	-13	-18	-30	-33	13	11	7	11				
PORT MURCHUCA																						
500	7	6	3	3	4	0	-1	-8	-7	-3	-3	-6	-11	-13	9	8	6	8	1485	N.M.I.		
1000	19	15	2	7	10	2	1	-20	-16	-2	-7	-11	-20	-22	9	9	7	9				
18000	35	28	3	16	19	6	4	-30	-31	-4	-18	-23	-36	-39	14	13	7	12				
PORT MURCHUCA																						
500	7	6	4	3	4	0	-2	-8	-7	-4	-3	-6	-12	-13	10	9	6	8	1195	N.M.I.		
1000	20	15	4	8	11	3	1	-21	-16	-4	-9	-13	-21	-23	10	10	8	10				
18000	35	28	6	16	19	7	5	-39	-31	-6	-19	-23	-37	-41	16	15	8	14				
PORT MURCHUCA																						
500	6	5	2	2	3	-1	-2	-7	-6	-2	-2	-4	-10	-11	9	8	6	7	1473	N.M.I.		
1000	16	14	1	6	9	1	0	-19	-15	-1	-7	-10	-19	-21	9	9	6	9				
18000	34	28	2	15	18	5	3	-37	-30	-2	-17	-22	-35	-38	14	13	7	12				
PORT MURCHUCA																						
500	1	2	0	2	1	-2	-3	-2	-3	0	-2	-2	-6	-7	7	6	4	6	1889	N.M.I.		
1000	-8	-4	-1	-1	-4	-9	-11	4	3	1	0	2	-3	-4	10	8	6	8				
18000	-19	-11	-5	-12	-12	-21	-24	11	5	2	6	5	-3	-5	15	13	10	13				
PORT MURCHUCA																						
500	0	1	-2	3	-1	-5	-6	-1	-1	2	0	0	-5	-6	8	7	5	7	1563	N.M.I.		
1000	11	9	-2	3	4	-1	-3	-12	-9	2	-4	-6	-13	-14	8	8	6	8				
18000	25	23	-2	10	13	1	-1	-29	-25	2	-12	-17	-28	-31	12	11	6	10				

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

00450'S ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

SAFETY OF AIRCRAFT IN FLIGHT

STATION	MONTHS												STANDARD DEVIATION
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
STATION 1	1024 N.M.I.	7	7	5	6	11	10	7	9	18	17	11	16
STATION 2	933 N.M.I.	10	10	7	9	11	10	8	10	18	16	9	15
STATION 3	1415 N.M.I.	10	9	6	8	10	10	9	10	16	15	9	14
STATION 4	154 N.M.I.	9	8	5	8	13	11	9	11	22	19	11	17
STATION 5	1798 N.M.I.	9	9	6	7	10	9	7	9	15	14	8	13
STATION 6	1039 N.M.I.	10	10	7	8	11	10	8	10	17	15	9	15
STATION 7	947 N.M.I.	8	7	5	7	9	8	5	8	14	12	7	11
STATION 8	1130 N.M.I.	9	9	7	8	11	10	8	10	17	16	10	15
STATION 9	1082 N.M.I.	8	8	6	8	10	9	8	9	17	16	10	15

operation--computer and a 120-ct absorbed.
one--two or annual fair value readings are indicated per cent reliability.
this six times reading.

EQUIVALENT HEADINGS AND STANDARD DEVIATIONS IN KILOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN KILOTS	EQUIVALENT HEADINGS												STANDARD DEVIATION			
	JAN	APR	JUL	OCT	0000	075	000	075	000	075	000	075	JAN	APR	JUL	OCT
PORT MARCHESA																
5000	2	1	2	3	2	2	2	2	2	2	2	2	8	7	5	7
10000	-9	-7	0	-2	-4	-12	-14	-14	-14	-14	-14	-14	13	11	8	11
10000	-23	-10	0	-9	-11	-20	-29	-29	-29	-29	-29	-29	21	19	11	17
PORT MARCHESA																
5000	9	0	0	0	7	1	0	0	0	0	0	0	9	9	6	8
10000	22	16	0	10	13	6	5	5	5	5	5	5	10	10	7	9
10000	37	26	12	19	21	11	9	9	9	9	9	9	15	14	8	14
PORT MARCHESA																
5000	5	3	0	1	1	-3	-4	-4	-4	-4	-4	-4	10	9	6	8
10000	17	13	0	6	8	1	0	0	0	0	0	0	10	9	7	9
10000	32	27	0	14	17	1	0	0	0	0	0	0	16	14	8	13
PORT MARCHESA																
5000	8	7	6	6	6	1	0	0	0	0	0	0	9	9	6	8
10000	19	14	9	10	12	6	4	4	4	4	4	4	10	10	7	9
10000	32	23	14	18	20	11	9	9	9	9	9	9	15	14	9	14
PORT MARCHESA																
5000	0	0	0	3	0	-4	-6	-6	-6	-6	-6	-6	9	8	5	7
10000	-12	-10	-1	-4	-7	-15	-17	-17	-17	-17	-17	-17	13	11	8	10
10000	-29	-24	-4	-12	-16	-30	-34	-34	-34	-34	-34	-34	20	18	11	16
PORT MARCHESA																
5000	5	4	0	2	2	-2	-3	-3	-3	-3	-3	-3	8	8	5	7
10000	16	12	0	5	7	0	0	0	0	0	0	0	9	8	6	8
10000	32	27	0	14	17	4	2	2	2	2	2	2	13	12	7	11
PORT MARCHESA																
5000	9	7	6	5	6	1	0	0	0	0	0	0	9	9	6	8
10000	20	15	8	13	12	6	4	4	4	4	4	4	10	10	7	9
10000	35	25	12	18	20	11	9	9	9	9	9	9	16	15	8	14
PORT MARCHESA																
5000	3	3	4	2	3	-1	-2	-2	-2	-2	-2	-2	8	7	6	7
10000	-1	0	3	0	0	-5	-7	-7	-7	-7	-7	-7	10	9	7	9
10000	-4	0	7	-1	0	-9	-12	-12	-12	-12	-12	-12	17	15	10	15
PORT MARCHESA																
5000	7	6	6	6	6	3	0	0	0	0	0	0	10	10	7	8
10000	19	14	6	9	11	4	2	2	2	2	2	2	11	10	8	10
10000	31	25	10	15	18	8	6	6	6	6	6	6	17	16	9	15

HEADINGS--COMPUTED FOR A 120-KT AIRSPEED.

000--DENOTES ANNUAL EQUIVALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.

NUMS SIGN DENOTES HEADINGS.

EQUIVALENT MEANINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

EQUIVALENT MEANING IN KNOTS	STANDARD DEVIATION											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
5000	10	10	10	10	10	10	10	10	10	10	10	10
10000	20	20	20	20	20	20	20	20	20	20	20	20
15000	30	30	30	30	30	30	30	30	30	30	30	30
20000	40	40	40	40	40	40	40	40	40	40	40	40
25000	50	50	50	50	50	50	50	50	50	50	50	50
30000	60	60	60	60	60	60	60	60	60	60	60	60
35000	70	70	70	70	70	70	70	70	70	70	70	70
40000	80	80	80	80	80	80	80	80	80	80	80	80
45000	90	90	90	90	90	90	90	90	90	90	90	90
50000	100	100	100	100	100	100	100	100	100	100	100	100
55000	110	110	110	110	110	110	110	110	110	110	110	110
60000	120	120	120	120	120	120	120	120	120	120	120	120
65000	130	130	130	130	130	130	130	130	130	130	130	130
70000	140	140	140	140	140	140	140	140	140	140	140	140
75000	150	150	150	150	150	150	150	150	150	150	150	150
80000	160	160	160	160	160	160	160	160	160	160	160	160
85000	170	170	170	170	170	170	170	170	170	170	170	170
90000	180	180	180	180	180	180	180	180	180	180	180	180
95000	190	190	190	190	190	190	190	190	190	190	190	190
100000	200	200	200	200	200	200	200	200	200	200	200	200

MEANINGS—COMPUTED FOR A 120-KT AIRSPEED.
 EQUIVALENT MEANINGS FOR INDICATED PER CENT RELIABILITIES.
 THESE SIG. MEANINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN KNOTS	EQUIVALENT HEADWIND MEASUREMENTS												STANDARD DEVIATION
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
PORT ANGELES													
5000	-2	-1	0	0	-1	-9	-10						401 N.M.I.
10000	-4	-1	0	-1	-2	-11	-13						13 12 9 11
15000	-12	-3	1	-3	-4	-16	-20						14 14 10 13
20000													20 20 11 19
PORT BANCROFT													
5000	-12	-10	-7	-7	-9	-17	-19						632 N.M.I.
10000	-25	-18	-7	-12	-15	-25	-28						13 13 9 11
15000	-44	-31	-11	-23	-26	-42	-46						13 13 10 13
20000													20 19 11 18
PORT BAYVIEW													
5000	-12	-10	-7	-6	-9	-16	-18						666 N.M.I.
10000	-24	-17	-7	-10	-14	-24	-27						13 12 8 10
15000	-42	-30	-9	-21	-24	-40	-44						13 13 10 13
20000													20 18 10 18
PORT BIRCH													
5000	1	0	3	4	2	-4	-5						1672 N.M.I.
10000	3	0	1	3	1	-4	-6						9 9 8 9
15000	5	1	1	3	2	-6	-8						10 10 8 10
20000													14 14 10 14
PORT BIRCH													
5000	-3	-4	-1	-2	-3	-12	-14						306 N.M.I.
10000	-11	-8	-4	-4	-7	-17	-20						15 14 10 12
15000	-23	-15	-8	-14	-14	-29	-33						15 16 12 14
20000													23 22 13 22
PORT BIRCH													
5000	-9	-6	-4	-6	-6	-12	-14						1214 N.M.I.
10000	-21	-13	-9	-13	-14	-22	-24						9 9 7 8
15000	-30	-27	-18	-26	-27	-38	-42						11 11 8 10
20000													17 16 10 16
PORT BIRCH													
5000	-1	3	0	1	-1	-7	-9						798 N.M.I.
10000	2	2	0	0	0	-6	-8						11 10 7 9
15000	3	6	1	2	2	-6	-8						12 12 8 11
20000													16 16 9 15
PORT BIRCH													
5000	5	4	3	2	3	-3	-5						425 N.M.I.
10000	10	9	3	3	5	-2	-4						13 12 8 11
15000	11	14	5	8	8	-2	-5						14 14 9 13
20000													20 20 11 19
PORT BIRCH													
5000	-3	-3	-1	-1	-3	-11	-13						199 N.M.I.
10000	-11	-6	-2	-3	-6	-16	-18						14 14 9 12
15000	-24	-11	-2	-9	-10	-25	-30						15 15 11 15
20000													22 22 12 21

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

A—OBSERVED ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DROPPED HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.										STANDARD DEVIATION			
	DIFFERENTIAL					RETURN								
	JAN	APR	JUL	OCT	***A50	A75	A85	JAN	APR	JUL	OCT	***A50	A75	A85
FORT KNOX														
5000	2	2	1	2	1	1	-7	-4	-3	-1	-2	-3	-10	-12
10000	6	5	2	1	3	4	-6	-11	-9	-2	-3	-6	-15	-17
18000	5	9	4	4	5	5	-8	-22	-18	-5	-10	-13	-26	-29
FORT KNOX														
5000	-2	-1	-1	0	-2	-8	-9	1	0	1	0	0	-5	-7
10000	0	1	-1	0	0	-7	-9	-4	-3	0	0	-2	-9	-11
18000	0	3	0	0	0	-8	-10	-13	-12	-1	-4	-7	-17	-20
FORT KNOX														
5000	-10	-7	-4	-7	-7	-13	-15	4	4	4	7	6	0	0
10000	-27	-13	-10	-14	-15	-24	-24	20	12	9	13	13	6	5
18000	-36	-24	-19	-27	-26	-37	-40	31	23	18	24	22	13	11
FORT KNOX														
5000	-13	-10	-5	-6	-9	-17	-19	12	9	6	5	7	0	-2
10000	-25	-17	-8	-11	-15	-26	-29	23	15	7	10	13	3	1
18000	-44	-30	-10	-23	-25	-42	-47	38	24	9	18	20	6	3
FORT KNOX														
5000	11	7	5	7	7	-1	-3	-13	-9	-5	-7	-9	-18	-20
10000	22	15	9	10	13	3	1	-26	-18	-10	-11	-16	-27	-30
18000	34	20	13	20	20	6	3	-44	-27	-15	-26	-27	-44	-48
FORT KNOX														
5000	11	7	7	9	8	1	0	-13	-8	-7	-9	-10	-17	-19
10000	21	13	12	14	14	6	4	-25	-16	-13	-15	-17	-26	-29
18000	34	19	17	24	22	10	9	-43	-26	-20	-30	-29	-43	-47
FORT KNOX														
5000	-2	-7	-5	-4	-5	-12	-13	7	6	5	4	5	0	-1
10000	-20	-15	-7	-10	-13	-21	-23	19	15	7	10	12	5	3
18000	-39	-29	-12	-21	-24	-37	-41	34	26	12	18	20	10	8
FORT KNOX														
5000	14	10	7	3	9	1	0	-15	-11	-7	-9	-11	-19	-21
10000	29	21	13	12	17	8	6	-31	-22	-13	-13	-19	-30	-33
18000	46	28	18	27	27	14	11	-51	-33	-19	-31	-32	-49	-53
FORT KNOX														
5000	-12	-9	-5	-5	-8	-17	-19	10	8	5	5	6	-1	-3
10000	-24	-16	-7	-10	-14	-25	-28	20	13	7	8	11	1	0
18000	-42	-27	-9	-21	-23	-40	-45	33	20	8	16	17	4	1

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	MONTH												STANDARD DEVIATION	
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
MEXICO CITY														
PORT KNOTS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-8	-8	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	9	9
10000	-13	-9	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	9	9
15000	-20	-17	0	0	0	0	0	0	0	0	0	0	13	13
PITTSBURGH														
PORT KNOTS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-10	-7	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	14	14
10000	-19	-12	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	14	14
15000	-34	-22	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	21	21
WIGHT AFB														
PORT KNOTS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-11	-7	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	12	12
10000	-21	-13	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	12	12
15000	-34	-23	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18	18	18
WELLS AFB														
PORT KNOTS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-7	-6	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	9	9
10000	-20	-14	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	10	10
15000	-30	-20	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	16	16
WFO COMBELLAND														
PORT KNOTS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	14	10	7	7	7	7	7	7	7	7	7	7	14	14
10000	20	20	13	12	12	12	12	12	12	12	12	12	15	15
15000	45	27	17	17	17	17	17	17	17	17	17	17	22	22
NEW ORLEANS														
PORT KNOTS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-8	-6	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	13	13
10000	-15	-10	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	13	13
15000	-29	-17	0	0	0	0	0	0	0	0	0	0	19	19
NIAGARA FALLS														
PORT KNOTS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	5	5	5	5	5	5	5	5	5	5	5	14	14
10000	19	12	9	9	9	9	9	9	9	9	9	9	15	15
15000	20	14	12	12	12	12	12	12	12	12	12	12	22	22
CHANDLER AFB														
PORT KNOTS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-7	-6	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	0	0
10000	-10	-14	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	10	10
15000	-37	-28	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	15	15
PATRICK AFB														
PORT KNOTS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	0	1	0	0	0	0	0	0	0	0	0	0	11	11
10000	5	4	1	1	1	1	1	1	1	1	1	1	13	13
15000	5	0	3	3	3	3	3	3	3	3	3	3	10	10

HEADINGS--COMPUTED FOR A 120-KT AIRSPEED.

0-0--GIVES AVERAGE EQUIVALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.
THUS SUCH GIVES HEADINGS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN FEET FOR 120-RT ARTS

EIGHT IN FEET	EQUIVALENT HEADINGS AND STANDARD DEVIATION IN FEET FOR 120-RT ARTS												STANDARD DEVIATION
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
FORT KNOX SCCO 10000 10000	12	0	6	0	0	-1	-10	-20	-20	-10	-10	-20	10000
	25	17	11	15	22	0	-20	-10	-10	-20	-10	-20	10000
	30	22	15	23	22	0	-20	-10	-10	-20	-10	-20	10000
FORT KNOX SCCO 10000 10000	11	-6	-4	-4	-4	-17	10	0	0	0	0	0	10000
	-20	-13	-11	-14	-15	-24	10	0	0	0	0	0	10000
	-33	-22	-18	-25	-26	-34	25	11	15	20	20	20	10000
FORT KNOX SCCO 10000 10000	10	-13	-6	-6	-13	-21	13	0	0	0	0	0	10000
	-27	-20	-10	-13	-14	-32	20	10	15	15	15	15	10000
	-46	-32	-16	-24	-27	-41	-1	0	0	0	0	0	10000
FORT KNOX SCCO 10000 10000	3	2	3	3	3	-7	-8	-10	-10	-10	-10	-10	10000
	9	4	4	4	4	-7	-10	-13	-13	-13	-13	-13	10000
	12	5	6	6	7	-9	-11	-14	-14	-14	-14	-14	10000
FORT KNOX SCCO 10000 10000	9	7	5	5	6	-1	-11	-20	-20	-20	-20	-20	10000
	18	14	6	5	13	1	-22	-17	-17	-17	-17	-17	10000
	23	21	9	14	15	0	-16	-20	-20	-20	-20	-20	10000
FORT KNOX SCCO 10000 10000	13	9	7	9	9	3	-15	-10	-10	-10	-10	-10	10000
	27	19	13	13	17	0	-30	-21	-21	-21	-21	-21	10000
	42	25	18	26	26	13	-40	-31	-31	-31	-31	-31	10000
FORT KNOX SCCO 10000 10000	2	0	2	2	2	-8	-9	-11	-11	-11	-11	-11	10000
	3	2	2	2	2	-9	-11	-13	-13	-13	-13	-13	10000
	2	0	2	2	2	-14	-22	-18	-18	-18	-18	-18	10000
FORT KNOX SCCO 10000 10000	10	-7	-4	-7	-7	-15	9	0	0	0	0	0	10000
	-21	-13	-10	-14	-15	-23	20	12	10	10	10	10	10000
	-36	-24	-19	-27	-26	-37	31	23	18	20	20	20	10000
FORT KNOX SCCO 10000 10000	7	-4	-3	-8	-8	-13	6	1	1	1	1	1	10000
	-16	-9	-10	-12	-12	-20	13	7	11	11	11	11	10000
	-24	-15	-14	-20	-19	-26	16	12	12	12	12	12	10000

MEANINGS--COMPUTED FOR A 120-RT ARTS.

00--REQUIRES ANNUAL EQUIVALENT HEADINGS AND STANDARD DEVIATION FOR 120-RT ARTS.

MINUS SIGN DENOTES MEANINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN SPEEDS FOR GREAT CIRCLE AND COURTES

HEIGHT IN FEET	FAMILY VALLEY HEADQUARTERS												STANDARD DEVIATION
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	
FORT LEAVENWORTH TO FORT LEWIS													
5000	-7	-5	-3	-4	-6	-13	5	3	3	3	3	3	1000 0.00
10000	-19	-11	-8	-13	-20	-22	10	6	12	11	9	8	1000 0.00
18000	-33	-22	-18	-26	-36	-38	20	10	17	21	11	9	1000 0.00
FORT LEAVENWORTH TO FORT ORD													
5000	-4	-4	-2	-1	-3	-9	3	4	2	1	2	3	1000 0.00
10000	-15	-10	-7	-10	-11	-19	14	7	7	9	9	7	1000 0.00
18000	-32	-24	-16	-20	-22	-37	27	21	13	17	10	7	1000 0.00
FORT LEAVENWORTH TO FORT PUEBLO													
5000	6	4	2	4	3	-3	-9	-9	-2	-4	-3	-13	1000 0.00
10000	13	10	3	7	7	0	-17	-13	-4	-8	-10	-22	1000 0.00
18000	19	17	0	13	13	2	-32	-23	-9	-10	-20	-30	1000 0.00
FORT LEAVENWORTH TO FORT SILL													
5000	-6	-7	-8	-3	-7	-17	6	5	7	3	3	3	1000 0.00
10000	-13	-10	-5	-4	-9	-20	9	7	3	4	6	3	1000 0.00
18000	-26	-19	-6	-12	-15	-33	12	10	3	3	7	3	1000 0.00
FORT LEAVENWORTH TO FORT WOLTERS													
5000	-5	-6	-7	-2	-6	-13	3	3	7	1	3	3	1000 0.00
10000	-11	-8	-4	-4	-7	-16	6	3	4	2	4	3	1000 0.00
18000	-22	-15	-5	-8	-12	-25	7	6	4	2	4	3	1000 0.00
FORT LEAVENWORTH TO FORT WISNER													
5000	2	0	4	4	2	-3	-3	-1	-3	-6	-12	-12	1000 0.00
10000	4	1	3	4	3	-4	-7	-3	-3	-8	-12	-13	1000 0.00
18000	6	3	4	5	4	-6	-15	-9	-9	-12	-20	-22	1000 0.00
FORT LEAVENWORTH TO GEN MITCHELL													
5000	9	6	6	7	6	-1	-11	-7	-9	-8	-17	-19	1000 0.00
10000	18	12	10	11	12	3	-21	-16	-10	-13	-23	-27	1000 0.00
18000	29	19	16	17	19	6	-30	-23	-17	-23	-25	-30	1000 0.00
FORT LEAVENWORTH TO MILL AFB													
5000	-4	-4	-3	-4	-4	-10	4	4	3	3	3	3	1000 0.00
10000	-16	-10	-8	-12	-12	-20	17	10	6	12	11	9	1000 0.00
18000	-35	-24	-18	-25	-25	-37	30	21	17	22	21	19	1000 0.00
FORT LEAVENWORTH TO HONESTAD AFB													
5000	2	2	0	2	1	-4	-3	-3	0	2	2	3	1000 0.00
10000	9	6	1	4	3	-1	-13	-10	-1	3	-7	-15	1000 0.00
18000	17	16	4	10	10	1	-20	-22	-5	-10	-16	-20	1000 0.00

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00A--DEFINITE ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITY.

MINUS SIGN DENOTES HEADWINDS.

TO QUALIFY HEARSAYS AND STANDARDS IN CASES FOR GREAT CIRCLE AND COUNTRIES

[illegible]

• HEADINGS-COMPUTED FOR A 120-KT AIRSPEED.

SCHIFFMAN SATURNUS SIGS SIMIL
FOR SCULPTURE MENTVA ROS TAWING S IT DNDG--VOD

SMILING SIGN DENOTES SALVAGE.

THE ACEING VERTOL COMPANY

0210-0000-1

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AND COURSES

WIND IN KNOTS		EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS												STANDARD DEVIATION					
		DIRECT						RETURN											
FFET		JAN	APR	JUL	DEC	00450	A75	A05	JAN	APR	JUL	DEC	00450	A75	A05	JAN	APR	JUL	DEC
FORT LEAVENWORTH TO LUKE AFB																			
5000	-5	-5	-5	-5	-5	-5	-11	-12	4	5	5	5	4	-1	-2	9	9	9	9
10000	-16	-12	-7	-9	-11	-10	-20	-20	14	11	7	8	9	2	1	12	10	8	8
18000	-33	-26	-14	-10	-22	-34	-30	-30	27	22	13	15	10	7	5	19	17	10	10
FORT LEAVENWORTH TO MCGUIRE AFB																			
5000	14	10	7	9	9	2	0	0	-15	-11	-7	-9	-11	-10	-20	12	12	12	12
10000	28	19	13	13	17	8	6	6	-30	-21	-14	-15	-20	-29	-32	13	13	10	12
18000	45	28	20	27	28	16	13	13	-49	-32	-20	-31	-32	-47	-51	19	19	11	10
FORT LEAVENWORTH TO MEMPHIS																			
5000	7	4	2	5	4	-3	-5	-5	-9	-6	-3	-5	-6	-14	-17	14	14	14	14
10000	13	10	4	4	0	0	-2	-2	-10	-13	-4	-10	-12	-21	-24	14	14	11	10
18000	20	16	9	15	14	2	0	0	-33	-24	-10	-21	-21	-36	-40	22	21	12	10
FORT LEAVENWORTH TO MEXICO CITY																			
5000	-6	-7	-6	-1	-9	-11	-12	-12	5	7	6	1	4	0	-2	9	9	9	9
10000	-7	-6	-2	-2	-5	-11	-12	-12	5	6	2	1	2	-2	-4	9	9	7	6
18000	-15	-10	-2	-5	-7	-17	-19	-19	5	3	1	1	2	-3	-7	14	13	7	12
FORT LEAVENWORTH TO MINN-ST PAUL																			
5000	-1	0	2	0	0	-9	-11	-11	0	-1	-3	-1	-2	-11	-13	14	14	14	14
10000	0	0	1	0	0	-9	-12	-12	-4	-2	-3	-2	-3	-13	-15	14	15	12	10
18000	-3	0	1	-3	-1	-14	-10	-10	-12	-6	-6	-6	-6	-21	-24	22	21	13	10
FORT LEAVENWORTH TO MINOT AFB																			
5000	-9	-5	-2	-7	-6	-14	-16	-16	0	4	1	0	4	-3	-3	12	13	10	10
10000	-16	-9	-7	-11	-11	-20	-22	-22	13	8	5	9	0	0	-2	13	13	11	10
18000	-26	-16	-12	-20	-18	-31	-34	-34	15	10	4	13	11	0	-3	20	19	13	10
FORT LEAVENWORTH TO MELLIS AFB																			
5000	-4	-4	-3	-2	-4	-9	-10	-10	4	4	3	2	3	-2	-3	9	9	9	9
10000	-16	-11	-8	-10	-11	-18	-20	-20	14	10	6	9	10	3	1	11	10	8	8
18000	-33	-25	-16	-21	-23	-35	-30	-30	20	22	15	18	19	9	7	19	17	10	10
FORT LEAVENWORTH TO NEW CUMBERLAND																			
5000	14	10	7	9	9	2	0	0	-15	-11	-7	-9	-11	-10	-20	13	12	12	12
10000	28	19	13	14	17	9	6	6	-30	-20	-13	-15	-19	-29	-31	13	13	10	10
18000	44	28	19	26	27	15	12	12	-49	-32	-20	-30	-31	-47	-51	20	19	11	10
FORT LEAVENWORTH TO NEW ORLEANS																			
5000	1	0	0	2	0	-4	-8	-8	-3	-2	0	-2	-2	-9	-11	13	12	12	12
10000	4	3	0	1	2	-5	-7	-7	-9	-6	0	-5	-5	-14	-16	13	13	9	8
18000	4	7	5	7	5	-4	-7	-7	-20	-16	-6	-12	-13	-23	-20	19	18	10	10

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT PROBABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION		
	DIRECT			RETURN											
	JAN	APR	JUL	JUL	UCT	00ASO	A75	A05	JAN	APR	JUL	UCT		00ASO	A75
NIAGARA FALLS															
FORT LEAVENWORTH TO	TO														
5000	13	8	7	9	9	1	0								753 M.M.
10000	24	16	12	14	16	7	5								13 12 9 11
18000	38	24	19	24	25	13	10								14 14 10 13
CINARAD AFB															
FORT LEAVENWORTH TO	TO														
5000	-4	-4	-3	-1	-3	-8	-10								1197 M.M.
10000	-14	-11	-7	-9	-10	-17	-19								0 0 6 7
18000	-32	-25	-15	-19	-22	-34	-37								11 10 8 9
PATRICK AFB															
FORT LEAVENWORTH TO	TO														
5000	5	4	2	4	3	-2	-4								975 M.M.
10000	13	10	3	6	7	0	-1								11 11 7 9
18000	21	19	7	13	13	4	2								12 12 8 11
PITTSBURGH															
FORT LEAVENWORTH TO	TO														
5000	14	9	7	9	9	1	0								679 M.M.
10000	27	18	12	14	17	8	5								13 12 9 11
18000	43	27	19	26	27	14	11								14 14 10 13
REGINA															
FORT LEAVENWORTH TO	TO														
5000	-9	-5	-2	-7	-6	-14	-16								701 M.M.
10000	-17	-10	-8	-12	-12	-20	-22								12 12 10 12
18000	-27	-17	-13	-22	-20	-32	-35								12 12 10 12
SCOTT AFB															
FORT LEAVENWORTH TO	TO														
5000	12	8	6	8	8	0	-2								235 M.M.
10000	24	16	9	14	15	5	2								15 14 10 12
18000	39	24	16	25	24	11	8								15 15 12 15
SELF+IDGE AFB															
FORT LEAVENWORTH TO	TO														
5000	12	8	7	9	9	1	0								500 M.M.
10000	23	15	12	14	15	6	4								14 13 9 11
18000	37	23	18	23	24	11	8								14 15 11 13
SHAW AFB															
FORT LEAVENWORTH TO	TO														
5000	11	8	5	6	7	0	-1								765 M.M.
10000	22	16	7	9	12	4	2								12 12 9 10
18000	34	26	12	20	21	9	7								13 13 9 13
WESTOVER AFB															
FORT LEAVENWORTH TO	TO														
5000	14	9	8	9	9	2	1								1020 M.M.
10000	27	18	13	15	17	9	7								12 11 8 10
18000	42	26	20	26	27	15	13								13 13 9 12

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUVALENT HEADWINDS																STANDARD DEVIATION	
	DIPSY				RETURN													
	JAN	APR	JUL	OCT	00050	475	485	JAN	APR	JUL	OCT	00050	475	485	JAN	APR		JUL
FORT LEAVENWORTH TO WUPATSMITH																		
5000	10	6	7	8	7	0	-2	-12	-7	-7	-9	-9	-17	-19	14	13	10	11
10000	19	12	11	12	13	4	2	-22	-14	-11	-14	-15	-25	-27	14	14	11	13
18000	30	19	17	19	20	8	5	-39	-25	-19	-25	-26	-40	-44	21	20	13	20
FORT LEAVENWORTH TO VAKIMA																		
5000	-7	-5	-3	-6	-6	-11	-13	6	5	3	5	4	0	-2	9	9	7	8
10000	-19	-11	-8	-13	-13	-20	-22	19	10	4	12	11	5	3	10	10	8	10
18000	-33	-22	-19	-26	-25	-36	-39	29	16	17	23	21	11	0	17	16	11	14
FORT LEAVENWORTH TO YELLOWKNIFE																		
5000	-7	-3	-1	-7	-4	-11	-13	5	2	1	6	3	-2	-4	9	9	8	10
10000	-14	-8	-8	-12	-11	-17	-19	12	7	7	10	8	2	1	9	9	8	10
18000	-23	-13	-11	-18	-16	-26	-28	16	9	0	13	11	2	0	14	13	10	13
FORT LEWIS TO FORT ORD																		
5000	-2	-2	3	-1	0	-7	-8	1	2	-2	1	0	-5	-7	11	9	6	9
10000	0	0	-1	-2	-1	-9	-11	-4	-1	1	1	0	-9	-11	13	13	9	12
18000	1	-1	-2	-2	-2	-14	-17	-11	-5	0	-4	-5	-10	-21	22	20	13	19
FORT LEWIS TO FORT RUCKER																		
5000	5	4	2	4	3	-1	-2	-6	-5	-2	-4	-5	-10	-11	0	0	6	7
10000	17	10	6	10	10	4	3	-10	-12	-6	-11	-12	-18	-20	9	9	7	8
18000	27	19	12	19	18	10	8	-33	-24	-14	-23	-23	-33	-36	14	13	0	13
FORT LEWIS TO FORT SILL																		
5000	1	0	0	0	0	-4	-6	-1	-1	0	0	-1	-6	-7	0	0	6	7
10000	14	8	4	8	8	1	0	-16	-9	-5	-8	-10	-16	-18	10	9	7	8
18000	25	16	11	16	16	7	4	-30	-21	-13	-21	-21	-32	-35	17	15	10	15
FORT LEWIS TO FORT WOLTEPS																		
5000	0	0	-1	0	-1	-5	-6	-1	0	1	0	0	-4	-6	0	7	5	7
10000	13	8	3	6	7	0	0	-15	-9	-4	-7	-9	-16	-17	10	9	7	8
18000	23	15	9	16	15	5	3	-29	-20	-11	-20	-20	-30	-35	16	15	10	14
FORT LEWIS TO GEN MITCHELL																		
5000	10	5	4	7	6	0	0	-11	-6	-4	-8	-8	-14	-15	9	9	7	9
10000	20	11	11	14	13	7	5	-21	-12	-11	-15	-15	-22	-24	10	10	8	9
18000	30	19	21	25	23	14	11	-34	-23	-22	-28	-27	-37	-39	15	15	10	15
FORT LEWIS TO WILL AFB																		
5000	0	0	1	0	0	-5	-6	0	0	-1	0	-1	-6	-7	10	9	6	8
10000	13	7	4	5	6	0	-2	-15	-8	-5	-6	-9	-17	-19	13	11	9	11
18000	23	13	10	16	14	2	0	-20	-10	-13	-20	-20	-33	-36	21	20	14	19

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--MINUTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN INDICATES HEADWINDS.

WEIGHT IN TONS	STRENGTH EQUIVALENT MEMBERS	STANDARD SECTION
100	100	100
200	200	200
300	300	300
400	400	400
500	500	500
600	600	600
700	700	700
800	800	800
900	900	900
1000	1000	1000
1100	1100	1100
1200	1200	1200
1300	1300	1300
1400	1400	1400
1500	1500	1500
1600	1600	1600
1700	1700	1700
1800	1800	1800
1900	1900	1900
2000	2000	2000
2100	2100	2100
2200	2200	2200
2300	2300	2300
2400	2400	2400
2500	2500	2500
2600	2600	2600
2700	2700	2700
2800	2800	2800
2900	2900	2900
3000	3000	3000
3100	3100	3100
3200	3200	3200
3300	3300	3300
3400	3400	3400
3500	3500	3500
3600	3600	3600
3700	3700	3700
3800	3800	3800
3900	3900	3900
4000	4000	4000
4100	4100	4100
4200	4200	4200
4300	4300	4300
4400	4400	4400
4500	4500	4500
4600	4600	4600
4700	4700	4700
4800	4800	4800
4900	4900	4900
5000	5000	5000
5100	5100	5100
5200	5200	5200
5300	5300	5300
5400	5400	5400
5500	5500	5500
5600	5600	5600
5700	5700	5700
5800	5800	5800
5900	5900	5900
6000	6000	6000
6100	6100	6100
6200	6200	6200
6300	6300	6300
6400	6400	6400
6500	6500	6500
6600	6600	6600
6700	6700	6700
6800	6800	6800
6900	6900	6900
7000	7000	7000
7100	7100	7100
7200	7200	7200
7300	7300	7300
7400	7400	7400
7500	7500	7500
7600	7600	7600
7700	7700	7700
7800	7800	7800
7900	7900	7900
8000	8000	8000
8100	8100	8100
8200	8200	8200
8300	8300	8300
8400	8400	8400
8500	8500	8500
8600	8600	8600
8700	8700	8700
8800	8800	8800
8900	8900	8900
9000	9000	9000
9100	9100	9100
9200	9200	9200
9300	9300	9300
9400	9400	9400
9500	9500	9500
9600	9600	9600
9700	9700	9700
9800	9800	9800
9900	9900	9900
10000	10000	10000

[illegible]

***--DEMOTES ANNUAL END VALUE HEADINGS FOR INDICATED PER CENT DELINQUENCIES.
MINUS SIGN DENOTES HEADINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION			
	DIRECT						EQUVALENT HEADWIND IN KNOTS						STANDARD DEVIATION			
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
FORT LEWIS																
5000	-1	-1	1	-2	-1	-7	1	1	-1	2	0	-5	9	6	732	N.M.
10000	7	3	0	1	2	-6	-9	-5	-1	-2	-4	-12	13	12	6	11
18000	12	7	2	6	6	-8	-20	-13	-5	-12	-12	-25	21	19	13	18
FORT LEWIS																
5000	11	6	5	8	7	0	-12	-7	-5	-8	-8	-14	8	6	1990	N.M.
10000	21	12	12	14	8	7	-23	-14	-13	-15	-16	-23	9	9	7	8
18000	32	21	21	24	15	13	-37	-25	-22	-28	-28	-37	14	13	9	13
FORT LEWIS																
5000	2	2	0	2	1	-3	-3	-2	3	-2	-2	-7	8	7	1017	N.M.
10000	14	9	4	6	8	2	-16	-10	-4	-9	-10	-16	9	8	7	8
18000	24	17	10	17	16	7	-31	-22	-11	-21	-21	-31	14	13	9	13
FORT LEWIS																
5000	11	5	5	8	7	1	-12	-6	-5	-9	-8	-14	9	7	1039	N.M.
10000	21	12	13	15	9	7	-22	-13	-13	-16	-16	-23	9	9	7	8
18000	31	20	21	24	23	14	-35	-23	-23	-28	-27	-37	14	14	13	14
FORT LEWIS																
5000	0	0	2	0	0	-5	0	0	-2	0	-1	-6	10	6	706	N.M.
10000	3	2	-1	0	0	-7	-6	-3	1	0	-2	-10	14	12	6	11
18000	5	1	-1	0	0	-10	-15	-8	-1	-6	-7	-20	21	19	12	18
FORT LEWIS																
5000	11	6	5	7	7	1	-12	-7	-5	-8	-8	-14	9	6	1033	N.M.
10000	21	12	12	14	8	6	-22	-13	-12	-15	-16	-23	9	9	7	8
18000	32	20	20	25	23	15	-36	-24	-22	-28	-27	-37	14	14	9	14
FORT LEWIS																
5000	3	3	2	1	2	-2	-4	-3	-2	-2	-3	-8	9	7	1570	N.M.
10000	-4	0	-2	2	-1	-7	2	0	1	-3	0	-6	10	6	7	8
18000	-13	-2	-5	-5	-6	-15	7	-1	3	0	1	-6	15	13	11	12
FORT LEWIS																
5000	11	4	3	7	5	0	-12	-5	-2	-7	-7	-14	11	10	6	10
10000	16	9	9	13	11	4	-18	-10	-9	-14	-13	-20	12	10	9	10
18000	22	15	17	21	18	7	-27	-18	-13	-24	-22	-33	18	17	13	18
FORT LEWIS																
5000	8	5	4	6	5	0	-9	-6	-4	-6	-7	-12	9	6	1300	N.M.
10000	19	11	9	12	12	6	-20	-12	-9	-13	-16	-20	10	9	7	8
18000	30	19	17	23	21	12	-34	-23	-19	-27	-25	-36	14	13	10	14

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

---NEVOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITY.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET		EQUVALENT HEADWINDS												STANDARD DEVIATION					
		DIRECT				EQUVALENT HEADWINDS				REVERSE									
		JAN	APR	JUL	OCT	00ASO	475	ASO	JAN	APR	JUL	OCT	00ASO	475	ASO	JAN	APR	JUL	OCT
FORT LEWIS																			
5000	11	5	5	5	7	1	0	-11	-8	-5	-8	-8	-14	-15	9	9	7	8	
10000	21	12	12	15	14	8	7	-22	-12	-12	-15	-15	-22	-24	9	9	7	9	
18000	31	20	21	25	23	14	12	-35	-23	-22	-20	-27	-37	-39	15	14	10	14	
FORT LEWIS																			
5000	11	5	5	8	7	1	0	-11	-8	-5	-8	-8	-14	-15	9	9	7	8	
10000	20	11	12	15	14	7	6	-21	-12	-13	-16	-16	-22	-24	10	9	8	9	
18000	30	19	21	24	23	14	11	-34	-22	-22	-20	-26	-36	-39	15	14	10	14	
FORT LEWIS																			
5000	5	4	2	4	3	-2	-3	-9	-4	-1	-3	-4	-10	-12	9	9	7	10	
10000	0	2	0	1	1	-3	-4	-3	-3	0	-3	-3	-10	-11	12	9	8	9	
18000	-7	7	1	1	0	-9	-11	-4	-6	-3	-6	-6	-16	-18	16	15	12	15	
FORT OGD																			
5000	4	4	2	1	2	-1	-2	-5	-5	-2	-1	-4	-8	-9	8	7	5	6	
10000	16	12	4	7	9	3	2	-17	-13	-4	-8	-10	-17	-19	9	8	6	8	
18000	30	25	8	16	10	8	6	-35	-26	-9	-18	-22	-34	-37	14	13	8	12	
FORT OGD																			
5000	2	3	1	0	1	-3	-4	-3	-3	-1	0	-2	-7	-8	8	7	5	7	
10000	14	11	5	7	8	2	0	-15	-12	-4	-8	-10	-17	-19	11	10	7	9	
18000	28	23	11	15	10	7	5	-33	-26	-12	-17	-21	-33	-37	16	16	10	13	
FORT OGD																			
5000	2	2	0	0	0	-4	-5	-3	-3	0	0	-2	-6	-8	8	7	5	7	
10000	13	11	3	4	7	1	0	-15	-12	-3	-7	-9	-16	-18	11	9	7	9	
18000	28	23	8	14	16	6	4	-32	-26	-10	-16	-20	-32	-35	17	15	9	14	
FORT OGD																			
5000	5	4	3	4	3	3	-2	-6	-5	-3	-4	-5	-10	-11	8	8	6	7	
10000	15	9	9	10	10	4	3	-17	-10	-9	-11	-12	-18	-20	10	9	7	9	
18000	27	20	10	19	20	11	9	-32	-23	-19	-23	-24	-34	-37	16	15	9	14	
FORT OGD																			
5000	3	4	0	1	1	-3	-4	-3	-3	0	-1	-2	-7	-9	9	8	6	7	
10000	8	6	7	6	6	2	-2	-10	-7	-7	-7	-8	-16	-18	14	12	8	11	
18000	17	14	15	12	14	2	0	-24	-19	-16	-16	-19	-31	-34	22	20	12	18	
FORT OGD																			
5000	5	5	3	2	3	-1	-2	-6	-5	-3	-2	-4	-9	-10	8	8	5	7	
10000	17	13	6	9	10	4	3	-18	-13	-4	-9	-12	-18	-20	16	14	7	9	
18000	31	24	12	18	19	10	8	-36	-28	-12	-20	-23	-35	-38	15	14	8	13	

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN NOTES FOR GREAT CIRCLE AIR ROUTES

EIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION
	DIRECT						RETURN						
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	
FORT OGD 5000 10000 18000	TO 1 -5 -16	TO 3 -2 -4	JUNEAU -1 -2 -8	0 -2 -8	0 -2 -10	-4 -11 -23	-2 1 7	-3 0 0	1 1 5	-2 -2 0	-7 -7 2	-9 -8 -10	1399 N.M.I. 10 12 18
	TO -5 -11 -23	TO -1 -3 -13	KODIAK -3 -5 -13	-3 -7 -16	-3 -7 -16	-11 -16 -29	3 8 15	0 2 6	3 4 10	1 2 7	1 -4 0	-3 -4 -3	1751 N.M.I. 10 12 17
	TO 3 -1 -4	TO 3 0 -1	LAPSON AFB -2 1 4	0 1 0	0 1 0	-3 -4 -16	-3 -2 -5	-3 -2 -5	2 -3 -7	-2 -4 -6	-1 -3 -6	-7 -11 -19	640 N.M.I. 10 14 22
	TO 4 15 30	TO 4 12 24	LITTLE ROCK 2 5 11	2 8 17	2 9 21	-3 1 13	-4 -17 -34	-4 -13 -27	-2 -5 -12	-1 -9 -19	-3 -11 -22	-9 -20 -37	1439 N.M.I. 0 10 16
FORT OGD 5000 10000 18000	TO 6 17 31	TO 5 11 22	LOCKPORT 4 9 17	4 11 20	4 11 21	0 5 13	-7 -19 -37	-6 -13 -26	-4 -9 -10	-4 -11 -24	-6 -13 -25	-11 -21 -39	1826 N.M.I. 0 10 15
	TO 3 11 24	TO 4 10 19	LUKE AFB 2 5 11	0 6 14	1 6 14	-4 -3 0	-3 -12 -20	-4 -10 -22	-1 -2 -8	1 -6 -13	-2 -7 -17	-7 -16 -34	499 N.M.I. 9 14 21
	TO 4 16 30	TO 4 12 26	MEMPHIS 2 5 12	2 9 17	2 10 19	-3 2 8	-3 -17 -35	-3 -13 -27	-2 -5 -12	-1 -9 -20	-4 -11 -23	-8 -20 -37	1541 N.M.I. 0 10 16
	TO -3 5 14	TO -4 4 11	MEXICO CITY -3 -2 3	-4 -3 3	-4 -3 4	-8 -5 -3	3 -7 -20	4 -5 -16	4 3 2	2 0 -4	3 -2 -8	-1 -9 -22	1576 N.M.I. 7 13 13
FORT OGD 5000 10000 18000	TO 4 13 22	TO 4 7 17	MINN-AP PAUL 3 9 17	3 9 17	3 9 10	-2 1 6	-3 -15 -29	-4 -8 -21	-3 -9 -19	-4 -10 -21	-4 -11 -22	-9 -17 -32	1370 N.M.I. 0 10 17

CONVERSIONS—COMPUTED FOR A 120-KT AIRSPEED.

004—NOTES ANNUAL EQUIVALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN NOTES HEADINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT in FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION	
	DIRECT						REVERSE							
	JAN	APR	JUL	OCT	0050	075	JAN	APR	JUL	OCT	0050	075		
WINDY AFB														1136 N.M.I.
5000	6	4	2	4	3	-1	-2	-4	-2	-4	-4	-10	0	0
10000	9	5	0	7	7	1	0	-8	-8	-8	-9	-15	11	6
10000	14	11	16	13	13	3	1	-16	-16	-17	-19	-29	17	16
WELLS AFB														326 N.M.I.
5000	5	3	3	0	2	-2	-4	-3	-2	1	-3	-9	10	0
10000	11	9	4	5	7	-1	-3	-10	-4	-7	-8	-17	15	6
10000	25	20	12	13	16	4	1	-29	-23	-12	-19	-33	23	21
AFB (CLEANS														1630 N.M.I.
5000	3	1	0	2	1	-3	-4	-3	3	0	-2	-7	0	7
10000	14	11	2	6	7	1	0	-16	-12	-2	-9	-14	9	8
10000	20	24	5	14	14	6	4	-33	-27	-6	-30	-32	15	13
NIAGARA FALLS														1906 N.M.I.
5000	7	5	4	4	4	0	0	-8	-6	-4	-6	-11	0	7
10000	17	10	11	11	12	6	5	-19	-12	-11	-14	-20	5	9
10000	29	21	19	20	21	13	11	-35	-25	-20	-26	-35	15	14
CHAMPLAIN AFB														196 N.M.I.
5000	5	6	2	2	3	-2	-3	-5	-5	-2	-4	-10	11	9
10000	10	10	0	4	5	-3	-5	-11	-11	0	-6	-16	16	15
10000	18	12	4	7	9	-3	-6	-24	-17	-5	-13	-28	24	21
PITTSBURGH														1944 N.M.I.
5000	7	6	4	4	5	0	0	-8	-6	-4	-6	-11	0	7
10000	18	12	10	11	12	6	5	-20	-13	-10	-14	-20	9	9
10000	31	22	18	20	21	13	11	-37	-26	-18	-25	-34	15	14
ORGINA														1105 N.M.I.
5000	7	3	1	4	3	-1	-3	-7	-3	-1	-4	-10	9	8
10000	6	4	7	6	5	0	-2	-9	-5	-7	-8	-14	11	10
10000	0	0	14	9	10	0	-2	-17	-13	-16	-16	-24	17	16
SCOTT AFB														1507 N.M.I.
5000	5	4	1	2	3	-1	-2	-5	-5	-3	-4	-9	0	6
10000	15	11	7	13	10	4	3	-17	-12	-7	-12	-18	10	9
10000	29	22	15	18	20	11	8	-34	-25	-16	-23	-34	16	15
SELINGER AFB														1017 N.M.I.
5000	6	5	4	4	4	0	-1	-7	-5	-4	-6	-11	0	6
10000	16	10	10	11	11	5	4	-18	-11	-10	-13	-19	9	9
10000	28	21	18	20	21	12	10	-34	-24	-19	-23	-35	15	14

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

000--NOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN PFBT	EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES												STANDARD DEVIATION
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	
EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES													
FORT ORD	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	4	4	4	4	4	4	4	4	4	4	4	4	1700 MLME.
10000	15	9	10	11	11	11	15	9	10	11	11	11	0
18000	26	19	19	19	20	20	26	19	19	19	20	20	15
FORT ORD	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	2	2	2	2	2	2	2	2	2	2	2	2	200 MLME.
10000	-2	0	2	2	0	0	-1	-2	-3	-4	-5	-5	0
18000	-7	-2	2	-1	-2	-2	-1	-2	-3	-4	-5	-5	15
FORT ORD	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	4	3	0	2	2	2	4	3	0	2	2	2	1970 MLME.
10000	-1	0	0	2	0	0	-1	-2	-1	-4	-5	-5	0
18000	-6	0	1	-1	-1	-1	-2	-4	-4	-5	-5	-5	10
FORT PUCKER	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-9	-7	-3	-5	-5	-5	-9	-7	-3	-5	-5	-5	600 MLME.
10000	-21	-16	-3	-9	-12	-12	-24	-22	-24	-24	-24	-24	12
18000	-39	-31	-5	-20	-23	-23	-42	-38	-42	-42	-42	-42	12
FORT PUCKER	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-10	-8	-3	-4	-4	-4	-10	-8	-3	-4	-4	-4	600 MLME.
10000	-21	-14	-2	-8	-12	-12	-24	-22	-24	-24	-24	-24	12
18000	-39	-31	-2	-19	-22	-22	-42	-38	-42	-42	-42	-42	12
FORT PUCKER	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-2	-2	0	-1	-2	-2	-9	-11	-14	-14	-14	-14	700 MLME.
10000	-6	-4	-1	-2	-2	-2	-9	-11	-14	-14	-14	-14	12
18000	-14	-11	-4	-8	-9	-9	-21	-24	-24	-24	-24	-24	12
FORT PUCKER	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-5	-4	-2	-3	-4	-4	-9	-11	-14	-14	-14	-14	1400 MLME.
10000	-18	-13	-5	-10	-11	-11	-19	-21	-21	-21	-21	-21	12
18000	-35	-27	-11	-21	-23	-23	-39	-35	-39	-39	-39	-39	12
FORT PUCKER	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-3	0	-2	0	-2	-2	-9	-10	-10	-10	-10	-10	400 MLME.
10000	5	4	-1	0	1	1	-5	-7	-7	-7	-7	-7	12
18000	14	14	0	5	7	7	-2	-4	-4	-4	-4	-4	12
FORT PUCKER	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	10	8	4	4	4	4	-1	-2	-2	-2	-2	-2	220 MLME.
10000	21	17	5	5	11	11	1	0	0	0	0	0	12
18000	37	28	5	18	20	20	6	3	3	3	3	3	12

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT PER ILIABILITIES.

*MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUVALENT HEADWINDS												STANDARD DEVIATION								
		WINDS						RETURNS														
		JAN	APR	JUL	OCT	00450	075	005	JAN	APR	JUL	OCT	00450	075	005	JAN	APR	JUL	OCT	00450	075	005
MUNTSVILLE																						
FORT RUCKER		TO																				
5000		-1	-1	0	-1	-1	-9	-11		0	0	0	1	0	-7	-9				13	13	216
10000		-7	-5	0	-2	-3	-13	-15		1	2	0	1	0	-8	-10				14	14	10
18000		-15	-15	-5	-7	-10	-23	-26		-1	4	4	2	2	-9	-12				20	20	11
JACKSONVILLE																						
FORT RUCKER		TO																				
5000		6	7	2	4	4	-2	-4		-7	-7	-2	-4	-3	-13	-15				12	12	201
10000		17	14	3	4	8	0	-2		-19	-15	-3	-5	-10	-20	-23				14	14	9
18000		33	27	4	16	18	5	2		-37	-30	-4	-17	-21	-37	-41				19	19	10
KEY WEST																						
FORT RUCKER		TO																				
5000		-4	-2	-3	-3	-3	-2	-11		3	1	3	1	2	-4	-5				11	10	645
10000		2	2	-2	-2	-3	-7	-4		-4	-3	2	0	-1	-8	-10				12	11	6
18000		7	9	0	0	3	-5	-7		-15	-14	3	-7	-7	-18	-21				16	15	9
LAWSON AFB																						
FORT RUCKER		TO																				
5000		-7	-5	-2	-5	-5	-10	-12		6	4	2	4	3	-1	-2				6	6	1022
10000		-19	-12	-6	-11	-12	-19	-21		17	10	6	10	10	4	3				9	9	7
18000		-33	-23	-14	-23	-23	-33	-36		27	19	12	19	18	9	7				14	14	9
LITTLE ROCK																						
FORT RUCKER		TO																				
5000		-8	-7	-2	-4	-5	-13	-15		7	6	2	4	4	-2	-4				13	13	400
10000		-19	-14	-3	-8	-11	-21	-23		16	12	2	7	8	0	-2				13	14	0
18000		-35	-29	-7	-18	-21	-37	-40		26	24	7	15	16	4	2				20	19	10
LOCKBURN																						
FORT RUCKER		TO																				
5000		3	2	1	1	1	-5	-7		-6	-3	-1	-2	-3	-11	-13				13	12	320
10000		4	3	2	2	2	-5	-7		-11	-7	-3	-4	-6	-15	-17				14	14	0
18000		6	0	0	4	2	-9	-11		-24	-12	-2	-11	-11	-25	-29				20	19	10
LOWLAND AFB																						
FORT RUCKER		TO																				
5000		8	6	5	5	5	0	-1		-10	-7	-5	-6	-7	-14	-15				11	10	7
10000		14	11	8	6	10	3	1		-21	-15	-9	-11	-14	-22	-24				12	12	0
18000		27	14	10	13	16	6	3		-39	-23	-13	-24	-24	-37	-41				17	17	10
LUKE AFB																						
FORT RUCKER		TO																				
5000		-6	-5	-2	-2	-4	-7	-11		5	4	2	2	3	-2	-3				9	8	6
10000		-19	-14	-2	-7	-10	-14	-20		18	14	2	7	9	2	0				10	9	7
18000		-37	-30	-4	-12	-22	-34	-39		33	27	4	16	18	6	4				15	14	0
MCQUIPPE AFB																						
FORT RUCKER		TO																				
5000		10	7	4	4	5	0	-2		-11	-8	-4	-5	-7	-14	-16				12	11	6
10000		18	14	7	7	11	2	0		-22	-17	-7	-8	-13	-23	-25				13	13	0
18000		30	18	8	17	16	5	2		-41	-26	-9	-22	-23	-39	-43				19	18	10

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION	
	DMPFY						RETURN							
	JAN	APR	JUL	OCT	00ASO	A75	ABS	JAN	APR	JUL	OCT	00ASO		A75
MEMPHIS														
FORT PUCKER	TO													
5000	-6	-5	-2	-3	-4	-12	-14	5	4	2	3	3	-4	-4
10000	-16	-12	-2	-6	-9	-19	-21	12	10	2	5	6	-2	-4
18000	-30	-25	-7	-16	-18	-33	-37	18	19	7	12	12	1	0
MEXICO CITY														
FORT PUCKER	TO													
5000	-5	-6	-1	0	-3	-9	-10	4	6	1	0	2	-2	-4
10000	-10	-8	0	-2	-5	-11	-13	9	8	0	2	4	-1	-2
18000	-23	-18	3	-8	-11	-22	-25	20	15	-3	7	8	0	-3
PENN-ST PAUL														
FORT PUCKER	TO													
5000	-6	-4	-1	-3	-4	-11	-13	3	3	1	3	2	-4	-4
10000	-17	-9	-4	-6	-8	-16	-18	6	5	3	4	4	-3	-5
18000	-23	-17	-9	-15	-15	-27	-30	6	8	6	8	6	-3	-5
MINOT AFB														
FORT PUCKER	TO													
5000	-8	-5	-2	-6	-6	-12	-14	7	4	2	5	4	-2	-3
10000	-16	-11	-6	-10	-11	-18	-20	12	8	5	8	8	1	0
18000	-28	-20	-12	-20	-20	-31	-34	16	13	9	14	12	3	0
NELLIS AFB														
FORT PUCKER	TC													
5000	-5	-5	-2	-2	-4	-9	-10	4	4	2	1	2	-2	-3
10000	-18	-14	-4	-8	-11	-18	-20	17	13	4	8	10	3	1
18000	-36	-29	-8	-19	-22	-35	-38	32	26	8	16	18	8	0
NEW CUMBERLAND														
FORT PUCKER	TO													
5000	8	6	3	4	5	-2	-3	-10	-7	-3	-4	-6	-14	-16
10000	15	12	6	6	9	1	0	-20	-15	-6	-7	-12	-21	-24
18000	25	14	6	15	13	2	0	-38	-30	-23	-8	-21	-36	-40
NEW ORLEANS														
FORT PUCKER	TO													
5000	-10	-8	-3	-4	-6	-14	-16	10	8	4	3	5	-1	-3
10000	-20	-16	-3	-6	-11	-21	-24	20	16	3	6	10	1	0
18000	-38	-30	0	-18	-21	-38	-41	35	27	0	16	18	3	0
NIAGARA FALLS														
FORT PUCKER	TO													
5000	5	3	2	3	3	-3	-5	-7	-4	-2	-3	-4	-11	-13
10000	9	6	4	4	5	-2	-4	-15	-10	-5	-6	-9	-18	-20
18000	12	4	3	9	6	-4	-7	-30	-16	-6	-16	-16	-30	-34
OXNARD AFB														
FORT PUCKER	TO													
5000	-5	-5	-2	-1	-4	-8	-10	5	4	2	1	2	-1	-2
10000	-17	-14	-3	-7	-10	-17	-19	16	13	3	7	9	3	1
18000	-35	-29	-7	-17	-21	-34	-37	31	26	6	15	18	7	5

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

EQUIVALENT HEADWIND IN KNOTS															STANDARD DEVIATION				
WEIGHT IN FEET		JAN	APR	JUL	JCT	00450	A75	A30	JAN	APR	JUL	OCT	00450	A75	A30	JAN	APR	JUL	OCT
FORT RUCKER																			
5000	1	3	0	2	1	5	-4	-2	-4	3	-2	-2	-9	-11	300 M.M.	11	11	0	10
10000	11	-9	1	2	5	-2	-4	-13	-11	-1	-3	-7	-16	-18	13	13	0	12	
18000	24	21	3	10	12	2	0	-30	-25	-3	-13	-16	-31	-34	16	17	0	15	
FORT RUCKER																			
5000	6	3	2	2	3	-4	-5	-9	-5	-2	-3	-5	-12	-14	611 M.M.	12	12	0	11
10000	9	7	4	4	5	-2	-4	-15	-11	-4	-5	-9	-18	-20	13	14	0	13	
18000	14	6	3	9	7	-3	-6	-31	-17	-5	-16	-16	-31	-34	14	19	11	18	
FORT RUCKER																			
5000	-9	-5	-3	-4	-4	-12	-14	7	4	2	5	4	-1	-3	1430 M.M.	10	10	7	9
10000	-17	-11	-7	-11	-12	-19	-21	13	9	6	9	9	2	0	10	10	11	10	
18000	-29	-20	-13	-21	-20	-31	-34	17	13	10	15	13	4	2	13	15	9	14	
FORT RUCKER																			
5000	-4	-4	-1	-3	-3	-11	-13	2	2	1	2	1	-5	-7	400 M.M.	13	12	9	11
10000	-11	-9	-2	-5	-7	-16	-18	5	6	1	3	3	-5	-7	14	14	10	13	
18000	-23	-19	-6	-13	-14	-23	-31	5	9	5	7	6	-4	-7	26	19	11	18	
FORT RUCKER																			
5000	2	1	1	1	1	-5	-7	-5	-2	-1	-2	-3	-10	-12	600 M.M.	12	12	0	10
10000	2	1	1	2	1	-6	-8	-9	-6	-2	-4	-5	-14	-16	13	13	9	13	
18000	1	-1	0	2	0	-10	-13	-21	-9	-2	-10	-10	-23	-26	19	19	11	18	
FORT RUCKER																			
5000	11	8	4	3	6	-1	-2	-11	-9	-4	-4	-7	-15	-17	300 M.M.	12	12	0	10
10000	19	15	5	5	10	1	0	-21	-17	-5	-6	-12	-22	-25	14	14	0	13	
18000	33	23	5	17	17	5	2	-39	-28	-5	-19	-21	-38	-42	19	19	10	18	
FORT RUCKER																			
5000	9	7	4	5	6	2	-2	-11	-8	-4	-5	-7	-14	-16	902 M.M.	11	11	0	10
10000	17	14	7	8	11	2	1	-22	-17	-3	-9	-14	-23	-26	13	13	9	12	
18000	29	17	9	18	16	6	3	-41	-25	-11	-23	-24	-38	-42	16	16	10	17	
FORT RUCKER																			
5000	1	0	1	1	0	-5	-9	-4	-1	-1	-1	-2	-9	-11	600 M.M.	12	12	0	10
10000	0	0	0	1	0	-7	-9	-8	-4	-2	-3	-5	-13	-15	13	13	9	12	
18000	-1	-3	0	0	-1	-12	-15	-18	-7	-1	-8	-8	-21	-24	19	19	11	18	
FORT RUCKER																			
5000	-6	-5	-2	-4	-5	-10	-11	5	4	2	4	3	-1	-2	1000 M.M.	0	0	0	7
10000	-19	-12	-6	-11	-12	-19	-21	17	10	6	10	10	4	3	9	9	7	8	
18000	-33	-24	-14	-23	-23	-33	-36	27	19	12	19	18	10	8	14	13	0	13	

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN FEET FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS														STANDARD DEVIATION			
	DIRECT				RETURN													
	JAN	APR	JUL	OCT	00ASO	A75	AB5	JAN	APR	JUL	OCT	00ASO	A75	AB5				
FORT SILL																		
5000	7	6	7	5	6	-1	-3	-9	-7	-7	-6	-8	-15	-17	13	12	9	11
10000	15	10	7	8	9	1	0	-19	-13	-8	-10	-13	-22	-24	13	13	13	13
18000	23	16	10	12	14	3	0	-34	-23	-12	-10	-21	-34	-30	20	19	11	10
FORT SILL																		
5000	-1	0	1	0	0	-6	-7	1	0	-1	0	0	-6	-7	9	9	7	8
10000	-15	-13	-4	-9	-10	-17	-19	14	9	3	8	8	0	0	12	10	9	10
18000	-32	-23	-11	-20	-21	-34	-37	26	19	9	17	16	5	3	20	17	11	17
FORT SILL																		
5000	2	3	0	2	1	-4	-5	-3	-3	0	-2	-2	-8	-10	10	10	7	8
10000	12	9	0	4	5	-1	-2	-14	-11	0	-5	-7	-15	-17	10	10	7	8
18000	24	22	1	12	13	2	0	-30	-26	-1	-14	-17	-31	-34	15	14	8	13
FORT SILL																		
5000	9	8	5	5	6	0	-1	-10	-9	-5	-5	-8	-15	-16	11	11	8	10
10000	22	15	4	8	11	3	1	-23	-18	-4	-9	-13	-23	-25	12	12	8	11
18000	37	29	7	19	21	8	6	-41	-32	-7	-21	-24	-40	-44	17	17	9	16
FORT SILL																		
5000	11	9	6	6	7	0	-1	-12	-10	-6	-6	-9	-17	-19	13	13	9	11
10000	24	18	5	10	13	4	1	-25	-19	-5	-11	-15	-25	-28	13	13	10	13
18000	40	30	8	20	22	9	6	-44	-33	-8	-23	-26	-42	-46	20	18	10	16
FORT SILL																		
5000	9	7	3	4	5	-1	-2	-9	-7	-3	-5	-6	-13	-15	11	11	7	9
10000	19	15	3	7	10	2	0	-21	-16	-1	-8	-12	-21	-23	12	11	8	11
18000	34	28	5	17	19	7	4	-39	-31	-5	-19	-23	-38	-41	17	16	9	15
FORT SILL																		
5000	1	1	0	1	0	-5	-6	-2	-2	0	-1	-1	-7	-9	10	10	7	8
10000	10	6	-1	4	4	-2	-3	-13	-9	1	-4	-6	-14	-16	10	10	7	8
18000	21	20	0	10	11	1	0	-29	-24	0	-13	-16	-29	-32	15	14	8	13
FORT SILL																		
5000	-1	-1	0	-1	-1	-6	-7	1	0	0	1	0	-4	-5	8	8	6	7
10000	-16	-9	-4	-9	-10	-17	-18	14	8	4	8	8	1	0	10	9	8	9
18000	-30	-20	-12	-21	-20	-32	-35	24	15	10	17	15	5	3	17	16	10	15
FORT SILL																		
5000	9	8	7	6	7	0	-2	-10	-9	-7	-6	-8	-17	-19	14	14	9	12
10000	23	17	5	10	13	3	1	-24	-18	-5	-11	-14	-25	-28	14	14	10	13
18000	39	30	8	19	21	8	5	-42	-33	-8	-22	-25	-42	-46	22	20	11	19

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00ASQ--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITY.

MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWINDS												STANDARD DEVIATION					
		DIRECT						REFLEX											
		JAN	APR	JUL	OCT	00450	475	AB5	JAN	APR	JUL	OCT	00450	475	AB5	JAN	APR	JUL	OCT
FORT SILL																			
5000	TO	11	9	7	7	LOCKBURN	1	0	-13	-10	-7	-7	-9	-17	-19	13	12	9	797 M.M.
10000		24	17	8	11	14	5	3	-25	-18	-9	-12	-16	-25	-28	13	13	10	10
18000		38	26	12	20	22	10	7	-44	-30	-13	-24	-26	-42	-46	19	18	11	12
FORT SILL																			
5000	TO	11	7	8	8	LOPING AFB	2	0	-13	-9	-8	-9	-10	-16	-18	16	15	7	1526 M.M.
10000		21	14	11	13	14	7	5	-24	-16	-12	-15	-17	-24	-26	11	11	8	10
18000		34	21	16	21	22	12	9	-42	-27	-10	-27	-28	-40	-43	16	16	10	15
FORT SILL																			
5000	TO	-7	-4	-2	-1	LUKE AFB	-3	-10	3	3	2	0	1	-3	-4	10	9	6	697 M.M.
10000		-17	-14	-4	-3	-11	-19	-21	16	13	4	7	9	2	0	12	10	8	10
18000		-35	-24	-9	-7	-21	-35	-39	31	26	9	15	18	7	4	19	17	10	16
FORT SILL																			
5000	TO	13	9	7	7	MCQUIRE AFB	2	0	-14	-10	-7	-8	-10	-17	-18	11	11	7	1176 M.M.
10000		26	19	10	11	15	7	5	-28	-20	-10	-12	-17	-27	-29	12	12	9	9
18000		42	28	14	23	25	13	11	-47	-32	-15	-27	-29	-44	-47	17	17	10	16
FORT SILL																			
5000	TO	18	3	7	6	MEMPHIS	7	-2	-11	-9	-7	-6	-9	-17	-19	14	13	9	415 M.M.
10000		24	18	5	10	13	4	1	-25	-18	-5	-11	-15	-25	-28	14	13	10	13
18000		40	30	8	20	22	8	5	-43	-33	-8	-22	-25	-42	-46	21	19	11	19
FORT SILL																			
5000	TO	-7	-8	-7	-1	MEXICO CITY	-6	-14	6	8	7	1	5	0	-1	10	9	6	914 M.M.
10000		-6	-5	-3	-1	-6	-10	-12	4	4	3	1	3	-2	-4	9	9	7	9
18000		-11	-7	-3	-3	-6	-14	-16	3	1	3	1	2	-5	-7	14	13	7	12
FORT SILL																			
5000	TO	1	2	5	1	WINST-PAUL	2	-5	-7	-3	-4	-5	-4	-11	-13	12	12	9	659 M.M.
10000		3	2	3	1	2	-5	-8	-8	-5	-4	-4	-6	-14	-16	13	13	10	13
18000		3	4	4	1	3	-8	-11	-18	-13	-7	-9	-11	-23	-27	20	19	11	18
FORT SILL																			
5000	TO	-5	-1	1	-4	MINOT AFB	-2	-12	3	0	-2	3	0	-6	-8	11	12	9	827 M.M.
10000		-9	-5	-1	-7	-6	-14	-16	5	3	0	4	2	-4	-6	12	12	10	11
18000		-16	-9	-4	-12	-10	-22	-25	3	1	1	4	2	-8	-11	19	17	11	17
FORT SILL																			
5000	TO	-2	-2	0	0	NELLIS AFB	-1	-8	2	2	3	0	0	-4	-6	9	9	6	818 M.M.
10000		-16	-13	-5	-9	-11	-18	-20	15	12	5	8	9	2	0	12	10	8	10
18000		-34	-27	-11	-18	-21	-35	-38	30	24	13	16	18	7	5	19	17	10	16

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUVALENT HEADWINDS										STANDARD DEVIATION									
	DIRECT					RETURN					JAN					JAN				
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85		JAN	APR	JUL	OCT	
FORT SILL																				
5000	TO	TO	TO	TO	NEW CUMBERLAND															1076 N.M.I.
10000	12	9	7	7	8	1	0	-13	-10	-7	-8	-10	-17	-18		12	11	8	9	
18000	26	18	10	11	15	7	5	-27	-20	-10	-12	-17	-26	-29		12	12	9	11	
	41	27	13	22	23	12	9	-47	-31	-14	-26	-28	-43	-47		18	17	10	17	
FORT SILL																				
5000	TO	TO	TO	TO	NEW ORLEANS															505 N.M.I.
10000	5	3	1	3	2	-4	-6	-6	-4	-1	-4	-4	-11	-13		12	12	8	11	
18000	15	10	0	6	7	-1	-3	-17	-12	0	-7	-9	-18	-21		12	12	9	12	
	25	22	2	14	14	2	0	-33	-27	-2	-17	-19	-34	-38		19	18	10	17	
FORT SILL																				
5000	TO	TO	TO	TO	NIAGARA FALLS															1037 N.M.I.
10000	11	8	7	7	8	1	0	-12	-9	-7	-8	-9	-16	-18		12	11	8	10	
18000	22	15	9	11	13	5	3	-25	-17	-10	-13	-16	-25	-27		12	12	9	12	
	34	22	14	19	21	13	7	-42	-28	-15	-25	-26	-40	-44		18	18	10	17	
FORT SILL																				
5000	TO	TO	TO	TO	OXFORD AFB															1022 N.M.I.
10000	-3	-3	-2	0	-2	-7	-8	3	3	2	0	1	-3	-4		6	8	5	7	
18000	-15	-12	-4	-7	-9	-17	-19	13	12	4	7	8	2	0		11	10	7	9	
	-33	-27	-11	-17	-21	-34	-37	29	24	13	14	17	7	5		18	16	10	15	
FORT SILL																				
5000	TO	TO	TO	TO	PATRICK AFB															907 N.M.I.
10000	5	5	2	4	3	-2	-3	-6	-6	-2	-4	-5	-11	-13		10	10	7	9	
18000	16	13	2	6	8	1	0	-18	-14	-2	-7	-10	-19	-21		11	11	8	10	
	30	26	4	15	17	5	3	-35	-29	-4	-17	-20	-35	-38		16	15	8	14	
FORT SILL																				
5000	TO	TO	TO	TO	PITTSBURGH															931 N.M.I.
10000	12	9	7	7	8	1	0	-13	-10	-7	-7	-9	-17	-19		12	12	8	10	
18000	24	17	9	11	14	6	4	-26	-19	-10	-12	-17	-26	-28		12	13	9	12	
	39	25	13	21	22	11	8	-45	-30	-14	-25	-27	-42	-44		19	18	10	17	
FORT SILL																				
5000	TO	TO	TO	TO	PEGINA															906 N.M.I.
10000	-5	-2	0	-4	-3	-10	-12	4	1	-1	3	1	-5	-7		11	11	9	10	
18000	-12	-6	-3	-8	-8	-15	-17	8	4	2	6	4	-2	-4		11	11	9	11	
	-20	-12	-6	-15	-13	-24	-27	9	5	3	8	5	-4	-6		18	16	11	16	
FORT SILL																				
5000	TO	TO	TO	TO	SCOTT AFB															448 N.M.I.
10000	9	8	6	6	7	0	-2	-11	-9	-8	-6	-9	-17	-19		14	13	9	11	
18000	20	15	7	9	12	3	1	-22	-16	-7	-11	-14	-24	-26		14	14	10	13	
	33	24	9	16	18	6	3	-40	-29	-10	-21	-23	-40	-44		21	20	11	19	
FORT SILL																				
5000	TO	TO	TO	TO	SELFIDGE AFB															870 N.M.I.
10000	10	7	7	7	7	0	-1	-11	-9	-7	-7	-9	-16	-18		12	12	8	10	
18000	20	14	9	11	13	4	2	-23	-16	-9	-12	-15	-24	-27		13	13	13	12	
	32	21	12	17	19	7	5	-40	-27	-14	-23	-25	-39	-43		19	18	11	18	

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS														STANDARD DEVIATION			
	DENSITY				EQUATION													
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
FORT SILL																		
5000	11	9	6	5	7	0	-1	-12	-10	-6	-5	-8	-16	-18	12	11	838 N.M.I.	
10000	24	18	6	9	13	4	2	-25	-19	-6	-10	-15	-25	-27	12	12	0	10
18000	40	31	8	20	22	9	7	-44	-33	-8	-23	-26	-42	-46	18	17	9	12
FORT SILL																		
5000	12	9	7	8	9	2	0	-14	-10	-7	-8	-10	-17	-18	11	11	1291 N.M.I.	
10000	25	18	11	12	15	4	6	-27	-19	-11	-14	-17	-26	-29	12	12	0	11
18000	40	26	15	23	24	13	10	-46	-31	-16	-27	-29	-43	-47	17	17	10	16
FORT SILL																		
5000	6	6	7	6	6	0	-2	-10	-7	-7	-7	-8	-15	-17	12	12	909 N.M.I.	
10000	17	11	8	9	11	4	0	-20	-14	-9	-11	-14	-22	-25	13	13	10	12
18000	26	17	11	14	15	3	2	-36	-24	-14	-21	-23	-36	-40	19	18	11	18
FORT SILL																		
5000	-1	-1	0	0	-1	-6	-7	1	0	0	0	0	-4	-6	6	8	1229 N.M.I.	
10000	-16	-9	-4	-9	-10	-17	-18	14	8	4	8	8	1	0	10	9	8	9
18000	-30	-21	-12	-21	-20	-32	-35	25	16	10	17	16	6	3	17	16	10	15
FORT SILL																		
5000	-5	-1	0	-5	-3	-9	-10	3	1	0	4	1	-4	-5	9	8	1775 N.M.I.	
10000	-12	-4	-5	-10	-9	-14	-16	10	5	4	8	6	1	0	9	8	7	9
18000	-21	-11	-8	-16	-14	-23	-25	12	6	5	10	7	0	-1	13	12	9	12
FORT WOLTERS																		
5000	7	6	6	6	5	-1	-3	-9	-7	-7	-5	-7	-15	-17	13	12	768 N.M.I.	
10000	13	10	6	7	8	0	-1	-17	-12	-7	-8	-11	-20	-22	13	13	10	12
18000	20	14	8	9	12	1	-1	-32	-22	-10	-16	-19	-33	-36	19	18	11	18
FORT WOLTERS																		
5000	0	0	2	0	0	-5	-6	0	-1	-3	-1	-2	-7	-8	9	9	831 N.M.I.	
10000	-14	-9	-2	-7	-8	-16	-18	13	8	2	7	7	0	-1	11	10	8	10
18000	-30	-23	-8	-18	-19	-32	-35	24	18	7	15	14	4	1	19	17	10	16
FORT WOLTERS																		
5000	2	3	0	1	1	-4	-5	-3	-3	0	-2	-2	-8	-9	10	9	1023 N.M.I.	
10000	12	9	0	4	5	-1	-2	-14	-11	0	-5	-7	-15	-17	10	10	6	8
18000	25	23	0	12	13	2	0	-30	-26	0	-13	-17	-30	-33	14	14	8	13
FORT WOLTERS																		
5000	10	8	4	4	6	0	-1	-11	-8	-4	-5	-7	-14	-16	11	11	658 N.M.I.	
10000	21	16	4	7	11	2	1	-22	-17	-3	-8	-12	-22	-24	12	12	7	9
18000	37	29	4	18	20	7	4	-41	-32	-4	-20	-24	-39	-43	17	16	9	15

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION	
	DIRECT				RETURN									
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450		A75
MOUNTVILLE														
FORT WOLTERS	TO													
5000	11	9	6	5	7	0	-1	-12	-9	-6	-5	-8	-16	-18
10000	23	17	5	9	12	3	1	-24	-18	-5	-10	-14	-24	-27
18000	39	29	5	18	20	7	4	-43	-32	-5	-21	-24	-41	-45
JACKSONVILLE														
FORT WOLTERS	TO													
5000	8	7	3	4	5	-1	-2	-9	-7	-3	-4	-6	-13	-14
10000	19	15	2	7	10	2	0	-21	-16	-2	-7	-11	-21	-23
18000	35	28	2	17	19	5	2	-30	-31	-3	-19	-22	-37	-41
KEY WEST														
FORT WOLTERS	TO													
5000	0	1	-1	0	0	-5	-7	-2	-2	1	-1	-1	-7	-8
10000	10	8	-1	4	4	-2	-3	-12	-9	2	-4	-6	-13	-15
18000	22	21	-1	10	11	0	-1	-27	-24	1	-12	-15	-28	-31
LARSON AFB														
FORT WOLTERS	TO													
5000	-1	0	1	0	0	-5	-6	0	0	-1	0	0	-5	-6
10000	-15	-9	-3	-9	-9	-16	-17	13	8	3	7	7	1	0
18000	-29	-20	-10	-20	-19	-31	-34	22	15	8	16	14	4	2
LITTLE ROCK														
FORT WOLTERS	TO													
5000	10	8	7	5	7	0	-2	-11	-9	-7	-5	-8	-16	-18
10000	22	16	5	8	12	2	0	-23	-17	-5	-9	-13	-24	-26
18000	36	27	5	16	18	5	2	-40	-30	-5	-19	-22	-39	-43
LOCKPORT														
FORT WOLTERS	TO													
5000	11	9	7	6	8	1	0	-12	-9	-7	-6	-9	-16	-18
10000	22	16	7	10	13	4	2	-25	-17	-8	-11	-15	-25	-27
18000	36	24	10	18	20	8	6	-43	-29	-11	-22	-25	-40	-44
LORING AFB														
FORT WOLTERS	TO													
5000	11	7	8	8	8	2	1	-13	-8	-8	-8	-10	-16	-17
10000	21	14	10	12	13	6	5	-24	-16	-11	-14	-16	-24	-26
18000	34	20	15	20	20	11	9	-42	-27	-17	-26	-27	-39	-43
LUKE AFB														
FORT WOLTERS	TO													
5000	-3	-3	0	0	-2	-7	-9	2	2	0	0	0	-4	-6
10000	-17	-13	-2	-7	-10	-18	-20	16	13	2	6	8	1	0
18000	-35	-28	-6	-16	-20	-34	-38	31	26	5	14	17	5	3
MCGUIRE AFB														
FORT WOLTERS	TO													
5000	12	9	7	7	8	2	0	-14	-10	-7	-7	-10	-16	-18
10000	25	18	9	10	14	6	4	-27	-20	-9	-11	-16	-26	-28
18000	41	27	12	22	23	12	9	-46	-32	-13	-26	-28	-43	-47

*MEANWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GFAAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS IN KNOTS												STANDARD DEVIATION		
	DIRECTION														
JAN	FEB	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	JUL	AUG	SEP		OCT	NOV
MEMPHIS															
5000	10	9	7	5	7	0	-2	-11	-9	-7	-5	-8	-16	-18	425 N.M.I.
10000	23	17	5	9	12	3	1	-24	-18	-5	-10	-14	-24	-27	13 13 9 11
18000	38	28	5	17	20	6	3	-42	-31	-5	-20	-23	-40	-45	20 19 11 18
MEXICO CITY															
5000	-7	-7	-7	-1	-7	-12	-14	7	8	7	1	5	0	-1	803 N.M.I.
10000	-6	-5	-3	-2	-4	-10	-12	5	6	3	1	3	-2	-4	10 9 6 9
18000	-12	-7	-2	-4	-5	-14	-17	5	2	2	2	2	-4	-6	14 13 7 12
MINNEAPOLIS															
5000	1	2	5	3	2	-5	-7	-3	-4	-5	-1	-4	-11	-13	760 N.M.I.
10000	2	2	3	1	2	-5	-8	-8	-5	-4	-3	-5	-14	-16	12 12 9 14
18000	1	2	3	1	1	-9	-12	-17	-12	-5	-7	-10	-22	-25	13 13 10 12
WHEELS AFB															
5000	-4	-1	2	-3	-2	-9	-11	3	0	-2	2	0	-6	-8	940 N.M.I.
10000	-8	-4	-1	-6	-5	-15	-15	4	2	0	4	2	-5	-6	11 11 9 10
18000	-14	-9	-4	-11	-10	-21	-24	2	1	0	4	1	-8	-11	12 12 9 11
WHEELS AFB															
5000	-2	-2	0	-3	-1	-9	-8	1	1	0	-1	0	-5	-6	863 N.M.I.
10000	-15	-12	-3	-7	-9	-17	-19	14	11	3	7	8	1	0	9 8 6 8
18000	-33	-27	-8	-17	-20	-34	-37	29	24	7	15	17	6	4	11 10 8 10
NEW ORLEANS															
5000	12	9	7	6	8	1	0	-13	-10	-7	-7	-9	-16	-18	1113 N.M.I.
10000	25	17	9	10	14	6	4	-27	-19	-9	-11	-16	-26	-28	11 11 7 9
18000	40	24	11	21	22	11	4	-46	-31	-12	-25	-27	-43	-46	12 12 9 11
NEW ORLEANS															
5000	6	4	1	3	3	-3	-5	-7	-6	-1	-4	-4	-12	-14	442 N.M.I.
10000	15	12	0	8	8	0	-2	-16	-13	0	-7	-10	-19	-21	12 12 8 11
18000	29	25	0	15	15	1	0	-35	-29	0	-17	-20	-36	-39	12 12 9 12
NIAGARA FALLS															
5000	11	8	7	5	7	1	0	-12	-9	-7	-7	-9	-16	-18	1092 N.M.I.
10000	21	14	8	10	12	3	3	-24	-16	-9	-12	-15	-24	-26	12 11 8 9
18000	33	21	12	19	19	3	6	-42	-27	-13	-23	-25	-39	-43	12 12 9 11
OAKLAND AFB															
5000	-3	-3	0	1	-1	-6	-9	2	2	1	-1	0	-4	-5	1053 N.M.I.
10000	-15	-12	-3	-6	-9	-15	-18	14	11	3	6	7	1	0	8 8 5 7
18000	-33	-27	-8	-16	-20	-33	-36	29	24	7	14	16	6	4	11 9 7 9

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION				
	DIRECT					P E R U M					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	TO	JAN	APR	JUL	OCT	TO	JAN	APR	JUL	OCT	
FORT WOLTERS															
5000	5	5	2	3	3	-2	-3	-6	-2	-4	-5	-11	-13	10	942 N.M.I.
10000	16	13	1	6	0	0	0	-10	-14	-6	-9	-18	-21	11	7 9
18000	31	26	1	15	17	4	1	-35	-29	-1	-20	-35	-38	15	15 7 10
FORT WOLTERS															
5000	11	9	7	6	0	1	0	-13	-10	-7	-9	-17	-18	12	974 N.M.I.
10000	23	16	0	10	13	5	3	-25	-18	-9	-16	-25	-27	12	0 10
18000	37	26	11	19	21	9	7	-44	-30	-12	-26	-41	-45	18	12 9 12
FORT WOLTERS															
5000	-4	-1	1	-4	-2	-9	-11	3	0	-2	0	-6	-7	10	1099 N.M.I.
10000	-11	-6	-2	-7	-7	-14	-16	7	4	1	4	-2	-4	11	0 10
18000	-19	-11	-5	-14	-12	-23	-26	7	4	2	4	-4	-7	17	16 10 15
FORT WOLTERS															
5000	9	8	7	5	7	0	-2	-10	-9	-7	-5	-8	-16	13	524 N.M.I.
10000	18	13	6	8	10	2	0	-21	-15	-6	-9	-13	-25	13	9 11
18000	28	20	7	13	15	3	1	-37	-26	-8	-10	-21	-36	20	13 10 13
FORT WOLTERS															
5000	10	7	7	5	7	0	-1	-11	-8	-7	-6	-8	-15	12	930 N.M.I.
10000	19	13	8	9	11	4	2	-22	-15	-8	-11	-14	-23	12	0 10
18000	30	19	10	15	16	6	3	-39	-26	-12	-21	-23	-37	19	9 12
FORT WOLTERS															
5000	11	9	5	5	7	0	0	-12	-9	-5	-5	-8	-15	11	883 N.M.I.
10000	24	18	5	8	12	4	2	-24	-18	-5	-9	-14	-23	12	7 10
18000	40	30	6	19	22	8	5	-43	-33	-6	-22	-25	-41	17	0 11
FORT WOLTERS															
5000	12	9	7	7	8	2	0	-13	-10	-7	-8	-10	-16	11	1334 N.M.I.
10000	25	17	10	11	15	7	5	-27	-19	-10	-12	-17	-26	11	7 9
18000	39	25	13	22	22	12	9	-46	-30	-15	-26	-28	-42	17	0 11
FORT WOLTERS															
5000	8	6	6	5	6	0	-2	-10	-7	-6	-6	-8	-15	12	900 N.M.I.
10000	16	11	7	8	10	2	0	-20	-13	-8	-10	-13	-21	11	0 10
18000	24	16	10	12	14	4	1	-35	-23	-12	-19	-21	-34	18	9 12
FORT WOLTERS															
5000	-1	0	1	0	0	-5	-6	0	0	-1	0	-1	-5	8	1319 N.M.I.
10000	-15	-9	-3	-8	-9	-16	-17	13	8	3	7	7	1	10	0 6 7
18000	-25	-20	-11	-20	-19	-31	-34	23	15	6	16	14	4	17	9 7 9

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

*A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. DIRECTION										STANDARD DEVIATION					
	DIRECT					RETURN					JAN	APR	JUL	OCT		
	JAN	APR	JUL	OCT	00450	A75	A85		JAN	APR	JUL	OCT	00450	A75	A85	
FRONT MOUNTS																
	YELLOWKNIFE															
5000	-4	-1	0	-5	-3	-8	-10		3	0	0	4	1	-4	-5	1000 N.M.I.
10000	-12	-6	-4	-9	-8	-14	-15		9	5	3	8	6	0	0	8 8 7 8
18000	-20	-11	-7	-15	-13	-22	-24		11	6	4	10	7	0	-2	13 12 9 12
FRONTISHER																
	GEN MITCHELL															
5000	-3	-1	-6	-6	-4	-11	-12		1	0	3	5	2	-4	-6	1422 N.M.I.
10000	-6	-2	-4	-6	-5	-12	-13		3	0	2	3	2	-4	-6	10 10 9 10
18000	-14	-7	-7	-11	-10	-19	-22		6	2	2	4	3	-5	-7	15 14 11 14
FRONTISHER																
	HUMBLE AAF															
5000	-3	-1	-2	-2	-3	-9	-10		0	0	1	2	0	-4	-6	1961 N.M.I.
10000	-7	-3	-2	-4	-4	-11	-12		1	0	0	2	0	-5	-6	9 9 7 8
18000	-17	-7	-4	-11	-10	-19	-21		3	0	0	3	1	-7	-9	10 10 7 9
FRONTISHER																
	MUNTSVILLE															
5000	-3	-2	-3	-5	-4	-9	-11		1	0	2	3	1	-4	-5	1870 N.M.I.
10000	-8	-3	-3	-5	-5	-12	-13		3	0	1	3	1	-4	-6	9 9 7 8
18000	-17	-8	-6	-11	-11	-20	-22		5	1	1	3	2	-6	-8	10 10 8 9
FRONTISHER																
	JUNEAU															
5000	-4	-2	-3	-9	-5	-10	-11		4	2	3	8	4	0	-2	1890 N.M.I.
10000	-6	-6	-5	-9	-7	-12	-13		6	6	4	8	6	1	0	7 7 7 8
18000	-11	-12	-9	-14	-12	-19	-21		8	10	8	12	9	2	0	8 7 7 7
FRONTISHER																
	LAPSON AFB															
5000	-7	-2	-4	-8	-6	-11	-13		6	2	3	7	4	0	-2	1917 N.M.I.
10000	-8	-5	-6	-9	-8	-13	-14		6	5	5	7	5	0	0	8 8 7 8
18000	-14	-12	-11	-15	-13	-21	-23		8	9	9	10	9	1	0	8 8 7 8
FRONTISHER																
	LITTLE ROCK															
5000	-4	-2	-4	-5	-4	-10	-11		2	1	3	4	2	-3	-4	1934 N.M.I.
10000	-8	-4	-4	-6	-6	-12	-14		4	1	2	3	2	-3	-4	9 9 7 8
18000	-17	-9	-7	-11	-11	-20	-22		6	3	2	4	3	-4	-6	9 9 8 9
FRONTISHER																
	LOCKPORT															
5000	-3	-1	-3	-5	-4	-10	-11		1	0	2	4	1	-4	-6	1532 N.M.I.
10000	-7	-2	-3	-5	-5	-12	-14		2	0	1	2	1	-5	-7	10 10 8 9
18000	-15	-7	-6	-11	-10	-20	-22		4	0	0	3	1	-7	-9	11 11 9 10
FRONTISHER																
	LOPING AFB															
5000	0	0	-1	-1	-1	-8	-10		-2	0	0	0	-1	-8	-10	1008 N.M.I.
10000	-2	0	0	-1	-1	-9	-11		-1	-1	0	-1	-1	-9	-11	11 11 13 11
18000	-9	-4	-1	-4	-5	-16	-19		0	0	-3	-3	-2	-13	-15	12 12 13 12
																17 17 13 17

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

STANDARD DEVIATION

[illegible]

• HEADINGS—COMPUTER FOR A 120-KT AIRSPEED.

•••—DENOTES ANNUAL EQUIVALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIG4 DENOTES HEADINGS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION			
	DIREC				SPEED											
	JAN	APR	JUL	OCT	JAN	APR	JUL	OCT	00450	475	485	JAN	APR	JUL	OCT	
FRONTSHER 5000 10000 18000	TO -3 -7 -16	SCOTT AFB -5 -6 -11	-4 -4 -7	-5 -5 -11	-4 -5 -11	-10 -12 -23	-11 -14 -22	2 3 5	0 1 2	3 2 2	4 3 4	2 2 3	-3 -4 -5	-5 -5 -7	9 10 14	1694 N.M.M.
FRONTSHER 5000 10000 18000	TO -3 -6 -14	SPLICE DOZ AFB -5 -5 -13	-4 -4 -6	-5 -5 -13	-4 -5 -13	-13 -13 -22	1 2 5	0 0 1	3 1 1	4 2 3	4 2 3	2 1 2	-4 -5 -7	-6 -7 -9	10 11 15	1361 N.M.M.
FRONTSHER 5000 10000 18000	TO -2 -7 -17	SMAN AFB -4 -4 -11	-2 -2 -4	-3 -4 -10	-3 -4 -10	-10 -11 -22	0 1 3	0 0 0	1 0 0	2 2 2	2 2 2	0 0 0	-4 -5 -7	-7 -7 -9	9 10 14	1009 N.M.M.
FRONTSHER 5000 10000 18000	TO 0 3 6	THULE 3 3 3	0 3 2	-3 -2 -7	-3 -4 -10	-6 -6 -10	0 -4 -9	-1 -2 -4	0 -3 -3	-3 -3 -5	-3 -3 -5	-1 -4 -6	-7 -11 -16	-9 -13 -19	0 12 17	767 N.M.M.
FRONTSHER 5000 10000 18000	TO -1 -4 -12	WESTVER AFB -2 -3 -7	-2 -1 -5	-2 -3 -7	-2 -3 -7	-10 -12 -20	-1 0 2	0 -1 0	1 0 -2	1 0 0	1 2 4	0 -1 0	-6 -8 -10	-8 -10 -13	10 12 16	1300 N.M.M.
FRONTSHER 5000 10000 18000	TO -2 -6 -14	WESTWORTH -4 -5 -11	-4 -3 -6	-4 -5 -11	-4 -5 -10	-12 -13 -22	1 3 5	0 0 2	3 1 1	4 2 4	4 2 4	2 1 2	-4 -5 -6	-6 -7 -9	10 11 15	1201 N.M.M.
FRONTSHER 5000 10000 18000	TO -7 -9 -14	VANCE -5 -6 -15	-4 -5 -11	-5 -6 -13	-5 -6 -13	-12 -14 -23	6 7 0	2 5 9	3 5 9	7 8 10	7 8 10	4 6 9	0 1 1	-2 0 0	0 7 12	1978 N.M.M.
FRONTSHER 5000 10000 18000	TO -4 -6 -10	VFLUWING AFB -3 -6 -16	-4 -6 -13	-5 -6 -13	-5 -7 -20	-13 -15 -22	4 6 0	1 5 10	3 5 8	8 7 12	8 7 12	3 5 9	-2 0 1	-3 -1 0	0 9 13	1219 N.M.M.
FRONTSHER 5000 10000 18000	TO -8 -23 -35	WILL AFB -7 -14 -26	-7 -11 -21	-7 -15 -26	-7 -15 -26	-13 -24 -41	7 10 30	5 11 21	5 11 20	6 13 23	6 13 23	5 13 23	0 6 12	-2 4 10	10 11 18	1075 N.M.M.

MEANINGS--COUNTED FOR A 120-KT AIRSPEED.
 004--IF NOTES ANNUAL EQUIVALENT HEADINGS FOR INDICATED PFD CENT RELIABILITIES.
 PLUS SIGN, NOTES HEADINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN FEET	EQUIVALENT HEADWIND IN M.P.H.												STANDARD DEVIATION									
	DIRECTION												MILES									
	JAN	APR	JUL	NOV	0000	075	ADS	JAN	APR	JUL	NOV	0000	075	ADS	JAN	APR	JUL	NOV	0000	075	ADS	
GEN MITCHELL																						
5000	0	0	0	0	0	0	-7	-2	-2	0	-1	-2	-8	-9	10	10	11	1100	N.M.I.			
10000	3	3	1	1	1	1	-4	-8	-8	-1	-2	-4	-12	-13	11	11	0	0	10			
18000	3	6	2	3	3	3	-8	-10	-15	-4	-9	-11	-22	-25	16	16	9	9	15			
GEN MITCHELL																						
5000	4	3	2	2	2	2	-4	-4	-5	-2	-3	-4	-11	-13	12	12	0	0	10			
10000	6	6	4	4	3	5	-2	-14	-10	-5	-5	-9	-17	-20	13	13	9	9	13			
18000	6	10	6	6	6	7	-3	-26	-20	-8	-14	-16	-29	-33	19	19	11	11	18			
GEN MITCHELL																						
5000	0	0	0	0	0	0	-10	-2	-2	0	-1	-2	-10	-12	14	13	9	9	11			
10000	-1	0	0	0	0	0	-12	-5	-4	-1	-2	-3	-13	-15	14	15	11	11	14			
18000	-7	-1	1	0	0	-1	-17	-13	-10	-4	-8	-9	-21	-25	21	21	12	12	20			
GEN MITCHELL																						
5000	2	2	1	2	1	1	-5	-4	-4	-1	-2	-3	-10	-12	12	11	0	0	10			
10000	5	4	2	2	2	3	-4	-12	-8	-3	-4	-7	-15	-18	13	13	9	9	12			
18000	4	7	4	4	4	4	-5	-22	-17	-6	-12	-14	-26	-29	18	18	10	10	18			
GEN MITCHELL																						
5000	-9	-4	-3	-9	-7	-12	-14	8	3	3	8	5	0	-1	9	0	7	0	8			
10000	-18	-10	-10	-15	-14	-20	-21	16	9	10	14	12	6	5	9	0	0	7	8			
18000	-28	-18	-16	-23	-21	-30	-32	24	15	14	20	17	9	8	13	12	9	9	12			
GEN MITCHELL																						
5000	-1	0	0	0	0	-1	-7	0	-1	0	0	0	-7	-8	10	10	7	7	9			
10000	1	1	0	0	0	-4	-7	-6	-5	0	-1	-3	-10	-12	11	11	8	8	10			
18000	0	4	1	1	1	-7	-9	-16	-13	-3	-7	-9	-20	-22	16	15	9	9	14			
GEN MITCHELL																						
5000	-11	-6	-5	-8	-8	-14	-15	10	5	5	8	6	1	0	9	9	7	7	9			
10000	-21	-12	-12	-15	-15	-22	-24	21	11	12	15	14	7	6	10	10	8	8	10			
18000	-34	-23	-22	-28	-27	-37	-40	30	20	21	25	23	14	11	16	15	11	11	15			
GEN MITCHELL																						
5000	-7	-4	-3	-3	-5	-13	-15	4	3	3	2	2	-4	-6	14	13	9	9	11			
10000	-14	-8	-5	-6	-9	-18	-20	8	5	3	4	4	-4	-6	14	14	11	11	14			
18000	-26	-15	-7	-11	-14	-28	-32	9	5	4	3	5	-6	-9	21	20	12	12	20			
GEN MITCHELL																						
5000	10	8	5	6	7	-1	-3	-12	-9	-6	-7	-9	-17	-20	15	14	10	10	12			
10000	20	14	11	10	13	3	1	-24	-16	-12	-12	-16	-27	-29	15	16	12	12	15			
18000	30	21	16	19	20	7	4	-41	-27	-18	-26	-27	-63	-67	23	23	13	13	22			

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A---DEMOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DEMOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.										STANDARD DEVIATION			
	DIRECT					RETURN					JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	00A50	075	085	JAN	APR	JUL	OCT	00A50	075	085
GEN MITCHELL	TC													
5000	13	7	9	10	9	2	0	-14	-8	-9	-11	-11	-19	-21
10000	23	13	14	17	16	7	5	-26	-15	-15	-19	-19	-28	-30
18000	37	21	22	26	25	13	10	-42	-26	-24	-31	-30	-44	-47
GEN MITCHELL	TO													
5000	-6	-6	-9	-5	-6	-12	-13	6	6	6	4	5	0	-1
10000	-17	-12	-9	-11	-12	-19	-21	15	11	8	9	10	3	2
18000	-34	-25	-16	-21	-23	-35	-38	27	21	15	16	18	9	7
GEN MITCHELL	TO													
5000	14	9	8	9	9	1	0	-15	-10	-8	-9	-11	-19	-21
10000	24	18	15	14	18	8	6	-30	-20	-15	-15	-20	-30	-33
18000	42	28	21	25	27	15	11	-48	-32	-22	-30	-32	-47	-51
GEN MITCHELL	TO													
5000	-4	-2	-2	-2	-3	-11	-13	2	1	2	1	1	-6	-8
10000	-10	-5	-3	-4	-6	-15	-18	3	1	1	1	1	-7	-9
18000	-20	-10	-4	-7	-10	-23	-27	1	0	0	-1	0	-12	-15
GEN MITCHELL	TO													
5000	-7	-7	-4	-2	-5	-11	-12	6	6	4	1	4	-1	-2
10000	-11	-8	-3	-4	-7	-13	-15	8	6	3	3	4	0	-2
18000	-23	-14	-1	-8	-10	-21	-24	12	7	0	4	4	-2	-4
GEN MITCHELL	TO													
5000	-13	-8	-6	-9	-9	-18	-21	12	7	6	9	8	0	-2
10000	-23	-14	-14	-16	-17	-27	-30	22	13	14	15	15	6	3
18000	-39	-24	-22	-28	-28	-43	-47	33	21	21	24	24	10	7
GEN MITCHELL	TO													
5000	-12	-7	-6	-10	-9	-18	-20	11	4	5	9	7	0	-2
10000	-22	-13	-14	-16	-17	-26	-28	21	12	13	15	15	6	4
18000	-35	-24	-22	-28	-27	-40	-43	30	20	21	24	23	11	8
GEN MITCHELL	TO													
5000	-6	-5	-5	-4	-6	-11	-12	5	5	5	4	4	0	-1
10000	-17	-11	-10	-11	-13	-19	-21	15	10	9	10	10	4	3
18000	-34	-24	-18	-23	-24	-35	-36	28	21	18	19	20	11	9
GEN MITCHELL	TO													
5000	14	9	8	9	9	1	0	-15	-10	-8	-9	-11	-19	-21
10000	27	19	14	13	17	7	5	-29	-20	-15	-15	-20	-30	-33
18000	42	27	21	25	27	14	11	-48	-32	-22	-30	-32	-46	-52

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION				
	DIRECT				RETURN												
	JAN	APR	JUL	OCT	JAN	APR	JUL	OCT	00A50	A75	A85						
NEW ORLEANS														773 N.M.I.			
GEN MITCHELL	TO													12	12	13	19
5000	-4	-3	-2	-1	-3	-10	-12							0	10	9	12
10000	-8	-5	-2	-2	-5	-13	-15							1	1	1	10
18000	-19	-9	0	-6	-8	-20	-24							-1	-1	-12	-14
NIAGARA FALLS														393 N.M.I.			
GEN MITCHELL	TO													14	14	15	23
5000	14	8	8	10	9	1	0							10	10	12	14
10000	27	17	15	16	18	8	6							15	16	12	14
18000	42	25	22	27	27	14	11							23	22	14	22
OXFORD AFB														1540 N.M.I.			
GEN MITCHELL	TO													8	8	9	16
5000	-6	-5	-4	-3	-5	-10	-11							2	3	0	-2
10000	-16	-10	-9	-10	-11	-18	-19							9	10	4	2
18000	-32	-24	-18	-21	-23	-33	-36							17	19	10	8
PATRICK AFB														941 N.M.I.			
GEN MITCHELL	TO													11	11	12	17
5000	1	2	1	1	1	-5	-6							7	7	10	10
10000	5	4	2	2	3	-4	-5							8	12	8	11
18000	5	7	4	4	4	-4	-7							17	17	10	16
PITTSBURGH														371 N.M.I.			
GEN MITCHELL	TO													15	14	10	12
5000	13	9	7	8	8	0	-1							15	15	11	14
10000	26	17	14	13	17	7	5							23	22	13	22
18000	40	26	20	25	26	13	10										
REGINA														827 N.M.I.			
GEN MITCHELL	TO													12	12	10	12
5000	-11	-6	-5	-10	-8	-16	-18							12	13	10	12
10000	-21	-12	-14	-16	-16	-24	-27							18	17	12	17
18000	-34	-22	-21	-27	-26	-37	-40										
SCOTT AFB														271 N.M.I.			
GEN MITCHELL	TO													15	14	10	12
5000	-6	-3	-3	-4	-4	-13	-15							15	16	12	15
10000	-12	-7	-5	-6	-8	-18	-20							23	22	13	22
18000	-24	-13	-8	-11	-14	-28	-32										
SELFIDGE AFB														224 N.M.I.			
GEN MITCHELL	TO													15	14	10	13
5000	14	8	8	10	9	1	-1							16	16	12	15
10000	26	17	15	16	18	8	5							24	23	14	23
18000	41	26	22	27	27	14	10										
SWAN AFB														632 N.M.I.			
GEN MITCHELL	TO													13	12	9	11
5000	7	5	3	3	4	-3	-5							14	14	10	13
10000	12	9	6	4	7	-1	-3							20	20	11	19
18000	14	14	8	10	10	0	-3										

* HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

00A—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION									
	DIRECT					RETURN					JAN					APR				
	JAN	APR	JUL	OCT	00A50	075	AB5	JAN	APR	JUL	OCT	00A50	075	AB5		JAN	APR	JUL	OCT	
GEN MITCHELL	TO																			
5000	15	9	10	10	2	0		-16	-10	-9	-10	-12	-20	-22	600 N.M.I.	13	13	9	11	
10000	28	18	16	18	9	7		-29	-20	-16	-17	-20	-30	-33		15	15	11	13	
18000	43	27	23	27	28	16	13	-47	-31	-24	-32	-33	-47	-51		21	21	13	20	
GEN MITCHELL	TO																			
5000	11	5	7	9	9	-1	-3	-1	-6	-7	-10	-9	-19	-21	221 N.M.I.	15	15	11	13	
10000	21	12	14	14	14	4	2	-24	-14	-13	-16	-17	-27	-30		16	16	12	15	
18000	32	19	18	21	21	8	4	-40	-25	-21	-27	-28	-43	-47		24	23	14	23	
GEN MITCHELL	TO																			
5000	-11	-4	-4	-8	-8	-14	-15	10	5	4	7	6	0	0	1400 N.M.I.	9	9	7	9	
10000	-21	-12	-12	-15	-15	-22	-24	20	11	11	14	13	7	5		10	10	8	9	
18000	-34	-23	-22	-28	-27	-37	-40	30	20	21	25	23	14	11		16	15	10	15	
GEN MITCHELL	TO																			
5000	-7	-3	-3	-9	-6	-12	-14	6	2	3	7	4	-1	-3	1504 N.M.I.	10	9	8	10	
10000	-16	-9	-11	-13	-13	-19	-20	14	8	10	12	11	4	3		9	9	8	9	
18000	-25	-16	-16	-20	-19	-28	-31	20	13	14	16	15	7	5		14	13	10	13	
HANOI	TO																			
5000	1	6	4	6	1	-5	-7	-1	-6	-4	6	-2	-8	-10	472 N.M.I.	8	7	9	8	
10000	11	10	6	2	7	0	0	-11	-10	-6	-1	-8	-14	-16		9	8	10	9	
18000	25	17	-2	6	10	0	-2	-26	-17	2	-6	-11	-23	-25		12	10	9	10	
HANOI	TO																			
5000	5	7	5	-2	3	-1	-3	-5	-7	-5	2	-4	-9	-10	1602 N.M.I.	6	7	7	6	
10000	17	13	6	5	10	4	2	-19	-14	-6	-5	-11	-18	-20		8	7	8	7	
18000	32	22	6	12	17	8	6	-40	-26	-6	-14	-20	-33	-36		10	9	8	8	
HANOI	TO																			
5000	4	6	2	-4	2	-3	-4	-4	-6	-2	4	-3	-8	-9	1968 N.M.I.	6	6	7	6	
10000	18	8	4	3	7	2	0	-19	-9	-4	-3	-9	-15	-17		7	6	7	7	
18000	34	24	0	8	15	3	1	-36	-25	0	-8	-16	-31	-33		9	8	7	7	
HANOI	TO																			
5000	2	7	4	-4	1	-3	-5	-2	-7	-4	4	-2	-8	-10	1244 N.M.I.	7	7	8	6	
10000	17	13	5	3	9	2	1	-17	-13	-6	-3	-11	-17	-19		8	7	9	8	
18000	33	23	0	9	15	4	2	-35	-25	0	-9	-17	-30	-33		10	9	8	8	
HANOI	TO																			
5000	4	6	6	-2	3	-2	-3	-4	-6	-6	2	-4	-9	-10	1472 N.M.I.	6	7	8	6	
10000	10	10	4	1	6	0	-1	-14	-11	-5	-2	-9	-15	-16		8	7	8	8	
18000	22	16	6	9	12	5	3	-32	-21	-7	-12	-17	-28	-30		11	10	8	9	

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
MANDI																		
5000	-5	-6	0	0	-3	-7	-8	5	6	0	0	2	-2	-3	5	5	1795 N.M.I.	
10000	-16	-12	-3	-3	-9	-15	-17	16	12	3	4	0	2	1	6	6	7	6
18000	-32	-22	3	-9	-15	-27	-30	30	21	-3	8	13	1	0	10	9	7	7
MANDI																		
5000	-1	-6	-4	2	-2	-8	-10	2	7	3	-1	2	-3	-4	7	7	10	7
10000	-11	-10	-6	-2	-8	-14	-16	11	10	6	3	7	1	0	9	10	8	8
18000	-25	-17	3	-6	-11	-22	-25	24	16	-3	6	9	0	-2	13	11	9	10
MANDI																		
5000	0	-4	-11	-2	-4	-9	-11	0	5	10	2	4	0	-1	6	5	1120 N.M.I.	
10000	0	0	-3	-2	-1	-4	-7	0	0	3	3	1	-3	-4	7	5	7	6
18000	1	2	0	0	0	-4	-6	-2	-2	0	0	-1	-7	-8	9	8	7	7
MANDI																		
5000	-5	-6	0	0	-3	-7	-8	5	7	0	0	2	-1	-2	5	5	1625 N.M.I.	
10000	-16	-13	-4	-3	-9	-16	-17	16	13	4	4	9	3	1	7	6	7	6
18000	-33	-22	3	-8	-15	-28	-31	31	21	-3	8	13	1	-1	10	9	7	8
MANDI																		
5000	0	-4	-10	-1	-4	-9	-11	0	5	10	1	4	-1	-2	6	6	6	7
10000	0	0	-3	-2	-1	-6	-7	0	0	2	3	1	-3	-4	7	5	8	6
18000	1	2	0	-1	0	-5	-6	-2	-2	0	0	-1	-7	-8	9	8	8	7
MANDI																		
5000	2	3	6	-3	1	-3	-5	-2	-3	-4	3	-2	-8	-9	7	7	1239 N.M.I.	
10000	0	2	1	-3	0	-6	-7	-4	-5	-2	2	-3	-9	-10	8	8	8	8
18000	4	5	5	3	4	-2	-4	-10	-12	-6	-6	-10	-18	-20	12	10	9	9
MANDI																		
5000	5	6	6	-2	3	-1	-3	-5	-4	-6	2	-4	-9	-11	6	7	1490 N.M.I.	
10000	14	12	5	3	8	2	0	-17	-13	-6	-4	-11	-17	-19	8	7	8	6
18000	28	19	6	11	15	7	5	-37	-24	-6	-13	-19	-31	-34	11	9	8	9
MANDI																		
5000	-1	-5	-8	-3	-5	-10	-11	2	5	7	3	4	0	-1	6	6	6	6
10000	2	1	0	0	0	-4	-5	-1	0	0	0	0	-5	-7	8	6	9	8
18000	1	4	-1	-4	0	-7	-8	-2	-4	1	4	0	-7	-8	10	9	9	8
MANDI																		
5000	7	7	6	-4	2	-3	-5	-3	-7	-6	4	-3	-9	-11	7	8	9	7
10000	12	10	5	1	7	0	-1	-15	-11	-5	-1	-8	-15	-17	9	8	9	8
18000	26	18	3	9	13	4	2	-33	-22	-4	-10	-17	-28	-31	11	10	9	9

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS																STANDARD DEVIATION			
	DIRECT				RETURN															
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT		
HANOI																				
5000																		1186 N.M.I.		
10000	0	-3	-8	-4	-4	-8	-9	0	3	8	4	3	0	-1	5	5	6	6		
18000	0	2	0	-1	0	-5	-6	-1	0	1	2	0	-4	-5	6	5	7	6		
HANOI																				
5000																		897 N.M.I.		
10000	1	7	4	-5	1	-4	-6	-1	-6	-4	5	-2	-8	-9	7	7	9	7		
18000	15	12	6	2	9	2	0	-15	-12	-6	-2	-9	-16	-17	9	7	9	8		
HANOI																				
5000																		1979 N.M.I.		
10000	30	21	0	3	13	3	0	-32	-22	0	-8	-15	-28	-30	11	10	9	9		
HANOI																				
5000																		713 N.M.I.		
10000	6	7	5	-1	4	-1	-2	-6	-7	-5	0	-5	-10	-11	6	7	7	6		
18000	19	15	6	7	11	5	3	-22	-16	-6	-8	-13	-20	-22	8	7	7	7		
HICKAM AFB																				
5000																				
10000	6	10	12	13	10	5	4	-7	-10	-11	-13	-11	-16	-17	9	6	6	6		
18000	2	4	7	8	5	0	-1	-2	-4	-6	-7	-6	-11	-12	10	7	6	7		
HICKAM AFB																				
5000																		1136 N.M.I.		
10000	-5	-3	3	2	0	-8	-10	3	3	-2	-2	0	-7	-8	14	10	8	9		
HICKAM AFB																				
5000																		1994 N.M.I.		
10000	0	4	6	4	3	-1	-2	-1	-4	-6	-4	-5	-10	-11	10	7	6	7		
18000	-4	-2	5	0	0	-6	-8	2	1	-5	0	-1	-7	-8	11	6	6	7		
HILL AFB																				
5000																		1826 N.M.I.		
10000	-20	-12	-1	-3	-9	-18	-20	17	11	1	2	6	-1	-3	15	11	8	10		
HILL AFB																				
5000																		1994 N.M.I.		
10000	2	7	11	10	8	3	2	-3	-7	-11	-10	-9	-13	-13	7	5	4	5		
18000	1	3	7	6	4	0	0	-2	-3	-6	-6	-5	-9	-10	8	6	4	5		
HILL AFB																				
5000																		1826 N.M.I.		
10000	-13	-6	3	2	-2	-10	-12	11	6	-3	-2	1	-4	-6	10	8	6	7		
HILL AFB																				
5000																		1826 N.M.I.		
10000	2	2	0	1	0	-3	-4	-3	-2	0	-1	-2	-7	-8	8	8	5	7		
18000	13	9	2	6	7	1	0	-15	-11	-2	-7	-9	-15	-17	9	8	6	8		
HILL AFB																				
5000																		1573 N.M.I.		
10000	25	21	6	14	15	6	4	-31	-25	-7	-17	-19	-31	-33	13	12	7	12		
HILL AFB																				
5000																		1573 N.M.I.		
10000	6	5	3	3	4	0	-2	-7	-4	-3	-4	-5	-11	-12	9	8	6	7		
18000	18	13	6	10	11	4	3	-20	-14	-6	-10	-12	-20	-22	10	9	7	9		
HILL AFB																				
5000																		1249 N.M.I.		
10000	31	24	12	19	20	11	8	-37	-28	-12	-23	-24	-36	-39	15	14	8	14		
HILL AFB																				
5000																		1249 N.M.I.		
10000	6	4	3	3	3	-1	-3	-7	-5	-3	-4	-5	-11	-12	5	9	7	8		
18000	18	12	7	11	11	4	3	-20	-13	-7	-11	-13	-20	-22	11	10	5	13		
HILL AFB																				
5000																		1249 N.M.I.		
10000	31	23	13	21	20	10	3	-37	-27	-14	-24	-24	-37	-40	17	16	9	15		

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION						
	DIRECT				INDIRECT				RETURN										
	JAN	APR	JUL	OCT	JAN	APR	JUL	OCT	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
HILL AFB		TO JACKSONVILLE												1599 N.M.I.					
5000	5	4	2	3	3	-1	-2	-6	-5	-2	-3	-4	-9	-11	8	6	7	7	
10000	17	12	5	9	10	3	2	-19	-13	-5	-10	-12	-19	-21	10	9	9	9	
18000	29	23	10	18	18	9	7	-36	-27	-11	-21	-23	-35	-38	15	14	8	13	
HILL AFB		TO JUNEAU												1346 N.M.I.					
5000	0	1	0	0	0	-5	-6	-1	-1	0	0	-1	-6	-7	9	8	6	8	
10000	-11	-5	-4	-4	-6	-13	-14	8	4	3	2	4	-2	-3	11	9	8	9	
18000	-22	-11	-9	-16	-15	-25	-28	15	6	6	10	9	0	-3	16	15	12	15	
HILL AFB		TO KEY WEST												1802 N.M.I.					
5000	1	1	0	0	0	-4	-5	-2	-1	0	-1	-1	-6	-7	8	8	5	7	
10000	12	8	1	6	6	0	0	-14	-10	-1	-6	-8	-14	-16	9	8	6	8	
18000	23	20	5	13	14	5	3	-30	-24	-6	-16	-10	-30	-32	13	12	7	12	
HILL AFB		TO KODIAK												1830 N.M.I.					
5000	-2	0	-2	-1	-2	-7	-8	-1	0	2	0	0	-4	-5	9	7	6	8	
10000	-12	-5	-5	-5	-7	-14	-15	9	4	4	3	4	-1	-3	11	9	8	9	
18000	-24	-14	-12	-18	-17	-27	-30	18	9	10	12	11	2	0	16	14	11	14	
HILL AFB		TO LARSON AFB												608 N.M.I.					
5000	1	0	-1	0	0	-6	-7	-1	-	1	0	0	-5	-7	10	9	6	8	
10000	-14	-7	-3	-5	-7	-15	-17	12	6	3	4	5	-1	-3	13	11	9	11	
18000	-26	-16	-11	-19	-18	-31	-35	20	11	7	13	12	0	-3	21	20	14	19	
HILL AFB		TO LITTLE ROCK												1005 N.M.I.					
5000	4	2	1	2	2	-3	-4	-4	-3	-1	-3	-3	-9	-10	9	10	7	8	
10000	17	11	6	10	10	3	2	-18	-12	-6	-11	-12	-19	-21	11	10	8	10	
18000	30	22	12	20	19	9	6	-35	-26	-13	-22	-23	-36	-39	18	17	10	16	
HILL AFB		TO LOCKBOURNE												1324 N.M.I.					
5000	8	6	5	6	6	0	0	-9	-7	-5	-7	-7	-13	-15	9	9	7	8	
10000	21	13	11	13	14	7	5	-22	-14	-11	-14	-15	-23	-25	11	10	8	10	
18000	34	23	19	24	24	14	12	-39	-27	-20	-27	-28	-39	-42	17	16	10	15	
HILL AFB		TO LORING AFB												1900 N.M.I.					
5000	9	5	7	8	7	1	0	-11	-6	-7	-9	-9	-14	-16	9	9	7	8	
10000	19	10	13	14	13	7	6	-21	-11	-14	-16	-16	-22	-24	10	10	7	9	
18000	29	19	23	23	23	14	12	-35	-23	-24	-28	-28	-37	-39	14	14	9	14	
HILL AFB		TO LUKE AFB												457 N.M.I.					
5000	-4	-4	-3	-2	-4	-8	-9	4	5	4	2	3	0	-1	7	7	5	6	
10000	1	0	-4	-1	-2	-8	-10	-3	0	4	0	0	-7	-9	13	10	8	10	
18000	-3	-4	-9	-1	-5	-17	-20	-7	-2	7	-2	0	-13	-17	21	19	12	18	

*HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

*A—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET		EQUIVALENT HEADWIND IN D.S.																	STANDARD DEVIATION	
		DIRECT							RETURN											
		JAN	APR	JUL	OCT	00450	A75	AB5	JAN	APR	JUL	OCT	00450	A75	AB5	JAN	APR	JUL	OCT	
HILL AFB																				
5000	TO	9	7	6	7	7	1	0	-11	-8	-6	-8	-9	-14	-16	9	9	1691 N.M.I.		
10000		22	14	12	13	14	8	6	-24	-15	-12	-14	-16	-24	-25	10	10	6		
18000		36	24	20	24	25	16	13	-41	-28	-21	-28	-29	-40	-43	15	15	9		
HILL AFB																				
5000	TO	4	3	2	3	2	-2	-4	-5	-4	-2	-3	-4	-10	-11	9	9	1097 N.M.I.		
10000		17	11	6	11	10	4	2	-19	-12	-6	-11	-12	-20	-22	11	10	8		
18000		31	22	13	20	20	10	7	-36	-26	-14	-23	-24	-36	-40	18	16	10		
HILL AFB																				
5000	TO	-6	-6	-6	-7	-5	-10	-11	6	6	7	4	5	1	0	7	6	1457 N.M.I.		
10000		2	0	-2	0	0	-5	-6	-4	-1	2	0	1	-6	-7	8	7	6		
18000		5	4	-3	5	0	-6	-8	-14	-10	2	-5	-6	-16	-18	14	12	7		
HILL AFB																				
5000	TO	4	5	5	4	5	0	-2	-7	-5	-5	-6	-6	-13	-14	10	10	851 N.M.I.		
10000		15	5	11	12	11	4	2	-17	-9	-11	-13	-13	-20	-22	11	11	9		
18000		26	19	21	21	21	10	7	-31	-22	-22	-25	-25	-37	-35	19	18	12		
HILL AFB																				
5000	TO	7	3	4	5	4	-1	-3	-7	-4	-4	-5	-5	-12	-14	10	10	625 N.M.I.		
10000		7	4	8	7	6	0	-2	-10	-5	-8	-8	-8	-15	-17	11	11	9		
18000		11	10	16	11	12	0	-2	-20	-15	-19	-17	-18	-30	-33	19	18	13		
HILL AFB																				
5000	TO	-3	-4	-2	-1	-3	-7	-8	3	4	2	2	2	-1	-2	8	7	325 N.M.I.		
10000		-4	-3	-6	-3	-5	-12	-14	2	3	6	3	3	-3	-5	13	11	9		
18000		-13	-11	-13	-9	-12	-24	-27	3	5	11	3	6	-6	-10	23	20	13		
HILL AFB																				
5000	TO	9	7	6	7	7	1	0	-10	-8	-6	-8	-8	-14	-16	9	9	1588 N.M.I.		
10000		22	14	12	13	14	8	4	-24	-15	-12	-14	-16	-24	-25	10	10	8		
18000		35	24	20	24	24	15	13	-41	-28	-21	-28	-29	-40	-43	16	15	9		
HILL AFB																				
5000	TO	2	1	0	1	0	-4	-6	-3	-2	0	-1	-2	-7	-9	9	9	1254 N.M.I.		
10000		14	9	2	8	8	1	0	-16	-11	-2	-8	-10	-17	-19	10	9	6		
18000		25	20	7	16	15	6	4	-32	-25	-8	-19	-20	-33	-36	16	15	9		
HILL AFB																				
5000	TO	9	6	6	7	6	1	0	-10	-7	-6	-8	-8	-14	-15	9	9	1465 N.M.I.		
10000		20	12	12	14	14	7	6	-22	-13	-13	-15	-16	-23	-25	10	10	8		
18000		33	22	21	24	24	15	12	-38	-26	-22	-27	-28	-39	-41	16	15	10		

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION				
	DIRECT					RETURN					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	00ASO	075	AB5	JAN	APR	JUL	OCT	00ASO	075	AB5	
HILL AFB 5000 10000 18000	TO -3 -5 -10	-3 -4 -15	-1 -6 -14	0 -4 -11	ORNAF AFB -2 -5 -15	-7 -13 -27	-8 -14 -30	3 3 9	3 3 10	2 6 13	0 4 7	1 4 10	-2 -3 -1	-4 -5 -5	532 N.M.I. 7 5 7 13 12 8 11 22 19 12 10
HILL AFB 5000 10000 18000	TO 4 15 28	3 11 22	1 4 9	2 8 17	PATRICK AFB 2 9 17	-2 3 9	-3 1 7	-5 -17 -34	-4 -12 -26	-1 -4 -9	-3 -8 -20	-4 -10 -22	-9 -17 -33	-10 -19 -36	1717 N.M.I. 8 6 7 9 9 7 8 14 13 8 12
HILL AFB 5000 10000 18000	TO 9 21 35	7 13 23	5 11 20	7 13 24	PITTSBURGH 6 14 24	1 7 15	0 5 12	-10 -23 -40	-7 -14 -27	-5 -12 -21	-7 -14 -28	-8 -16 -28	-13 -23 -40	-15 -25 -43	1634 N.M.I. 9 7 8 10 10 8 10 16 16 10 15
HILL AFB 5000 10000 18000	TO 7 1 0	2 1 3	3 5 10	3 3 3	REGINA 3 2 4	-2 -4 -7	-4 -6 -10	-7 -5 -11	-2 -2 -9	-3 -5 -14	-4 -5 -10	-4 -5 -12	-11 -23 -26	-13 -13 -26	636 N.M.I. 10 8 10 11 10 9 10 19 18 13 17
HILL AFB 5000 10000 18000	TO 6 18 32	5 11 22	3 9 17	4 12 23	SCOTT AFB 4 12 22	-1 5 12	-2 3 10	-7 -20 -37	-5 -12 -26	-4 -9 -18	-5 -13 -25	-6 -14 -26	-11 -21 -38	-13 -23 -41	1022 N.M.I. 9 7 8 11 11 9 10 18 17 10 16
HILL AFB 5000 10000 18000	TO 8 20 32	6 12 22	6 12 21	7 13 23	SELFRIAGE AFB 6 14 23	0 7 14	0 5 11	-9 -21 -37	-6 -13 -25	-6 -12 -22	-7 -14 -27	-8 -15 -27	-13 -22 -38	-15 -24 -41	1298 N.M.I. 9 7 9 11 11 8 10 17 16 10 16
HILL AFB 5000 10000 18000	TO 7 20 33	6 13 24	4 7 14	5 11 21	SHAW AFB 5 11 21	0 5 12	-1 3 10	-8 -21 -39	-6 -15 -28	-4 -8 -14	-5 -11 -24	-6 -14 -25	-12 -21 -38	-13 -23 -41	1548 N.M.I. 9 7 8 10 10 7 9 16 15 9 14
HILL AFB 5000 10000 18000	TO 10 21 34	7 13 23	7 13 22	8 14 24	WESTOVER AFB 7 15 25	2 8 16	1 7 14	-11 -23 -40	-7 -14 -27	-7 -13 -22	-8 -15 -28	-9 -16 -29	-14 -23 -39	-16 -25 -42	1753 N.M.I. 9 7 8 10 10 8 9 15 15 9 14
HILL AFB 5000 10000 18000	TO 8 19 30	5 10 21	6 12 21	7 13 23	Wurtsmith 6 13 23	0 6 13	0 4 11	-9 -20 -35	-6 -12 -24	-6 -13 -22	-8 -14 -27	-8 -15 -27	-14 -22 -37	-15 -24 -40	1249 N.M.I. 9 7 9 11 11 9 10 17 16 10 16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.												STANDARD DEVIATION			
	DIRECT						RETURN									
	JAN	APR	JUL	OCT	00450	075	095	JAN	APR	JUL	OCT	00450	075	095	AB5	
HILL AFB																
5000	0	0	-1	0	0	-6	-7	0	0	1	0	0	-5	-7	494 N.M.I.	
10000	-14	-8	-4	-6	-8	-15	-18	13	7	4	5	6	0	-2	9 6 8	
18000	-27	-17	-12	-20	-19	-32	-36	22	13	9	15	14	1	-1	10 13 21 9 11 20	
HILL AFB																
5000	2	0	0	0	0	-5	-6	-3	-1	0	0	-1	-7	-9	1284 N.M.I.	
10000	-8	-3	-2	-4	-5	-10	-12	5	2	1	2	2	-3	-4	9 8 7 9	
18000	-14	-5	-2	-9	-8	-17	-20	6	0	0	3	1	-7	-9	9 8 7 8 15 14 11 16	
HOMESTEAD AFB																
5000	4	3	3	1	2	-3	-5	-5	-3	-3	-2	-4	-10	-12	395 N.M.I.	
10000	0	0	2	1	0	-4	-8	-2	-1	-2	-2	-2	-9	-11	11 10 7 10	
18000	-8	-7	2	0	-2	-13	-16	-1	0	-2	-2	-2	-11	-13	12 12 8 11 17 16 9 14	
HOMESTEAD AFB																
5000	0	-1	1	0	0	-6	-8	-1	0	-1	0	-1	-7	-8	643 N.M.I.	
10000	-8	-6	0	-1	-4	-11	-14	5	4	0	0	1	-5	-7	11 10 7 9	
18000	-20	-18	-2	-8	-11	-23	-26	10	11	1	4	5	-3	-5	12 12 8 11 16 16 9 14	
HOMESTEAD AFB																
5000	5	3	4	2	3	-2	-4	-5	-3	-3	-2	-4	-10	-12	304 N.M.I.	
10000	-1	-1	3	1	0	-7	-9	0	0	-2	-2	-1	-9	-10	11 10 7 10	
18000	-11	-10	2	-1	-4	-15	-18	3	3	-2	-1	0	-9	-11	12 12 8 11 16 16 9 14	
HOMESTEAD AFB																
5000	-2	-3	0	-1	-2	-8	-9	0	2	0	1	0	-5	-7	831 N.M.I.	
10000	-12	-10	0	-4	-6	-14	-16	9	8	0	3	4	-2	-4	10 10 7 9	
18000	-27	-23	-3	-12	-15	-29	-31	18	18	3	9	10	1	0	11 11 8 10 16 15 8 14	
HOMESTEAD AFB																
5000	0	0	0	0	0	-6	-7	-2	-1	0	0	-1	-7	-9	869 N.M.I.	
10000	-4	-3	0	0	-2	-9	-11	-1	0	0	-1	-1	-8	-10	10 10 7 9	
18000	-11	-10	0	-2	-5	-16	-19	-4	0	0	-2	-2	-11	-13	12 12 8 11 16 16 9 15	
HOMESTEAD AFB																
5000	5	4	4	3	4	-2	-3	-7	-6	-4	-4	-6	-12	-13	1420 N.M.I.	
10000	7	9	5	5	6	0	-1	-13	-11	-6	-7	-9	-16	-18	10 10 7 9	
18000	12	7	6	11	8	0	-2	-27	-17	-8	-18	-17	-28	-31	11 11 7 10 15 15 9 16	
HOMESTEAD AFB																
5000	-2	-2	1	0	-1	-6	-7	1	2	0	0	0	-4	-5	1730 N.M.I.	
10000	-14	-11	0	-5	-8	-14	-16	13	10	0	4	6	0	-1	8 7 5 7	
18000	-31	-26	0	-14	-18	-30	-33	27	24	0	12	15	3	0	8 8 6 8 13 12 7 11	

*HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

**A—OF MONTHS ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT OF LIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT MEAN WINDS										STANDARD DEVIATION			
	DIRECT					RETURN					JAN APR JUL OCT			
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85
HOMESTEAD AFB	TO													
5000	5	4	3	2	3	-2	-4	-6	-5	-3	-3	-5	-11	-13
10000	4	6	3	4	4	-3	-4	-10	-9	-4	-5	-7	-15	-17
18000	6	3	4	0	5	-4	-6	-21	-13	-5	-13	-12	-23	-26
HOMESTEAD AFB	TO													
5000	-1	-2	0	-1	-1	-7	-9	0	1	0	1	0	-6	-7
10000	-11	-9	0	-3	-6	-14	-16	8	6	0	2	3	-3	-5
18000	-25	-22	-3	-11	-14	-27	-30	15	16	2	7	8	0	-2
HOMESTEAD AFB	TO													
5000	3	0	4	3	2	-2	-3	-3	0	-4	-3	-3	-8	-9
10000	-3	-3	4	0	0	-6	-7	3	3	-4	0	0	-4	-6
18000	-15	-15	5	-4	-7	-16	-19	14	14	-4	4	5	-2	-4
HOMESTEAD AFB	TO													
5000	-4	-3	0	-2	-3	-9	-10	2	2	0	2	1	-4	-6
10000	-12	-8	-3	-5	-7	-14	-16	7	5	2	3	4	-2	-4
18000	-24	-18	-7	-14	-15	-26	-29	10	10	5	7	7	-1	-3
HOMESTEAD AFB	TO													
5000	-6	-4	-1	-4	-4	-10	-11	4	3	1	3	2	-2	-4
10000	-14	-10	-4	-8	-9	-16	-18	10	7	4	6	6	0	0
18000	-27	-20	-9	-17	-18	-28	-31	15	13	7	11	10	2	1
HOMESTEAD AFB	TO													
5000	-2	-2	0	0	-1	-5	-7	1	2	0	0	0	-3	-4
10000	-14	-11	0	-5	-8	-14	-16	13	10	0	5	6	0	0
18000	-31	-26	-3	-15	-19	-30	-33	27	23	2	13	15	4	2
HOMESTEAD AFB	TO													
5000	3	2	2	2	2	-3	-5	-5	-4	-2	-2	-4	-10	-11
10000	2	3	2	3	2	-4	-6	-7	-7	-2	-4	-5	-13	-15
18000	1	0	3	5	2	-7	-9	-17	-9	-4	-10	-10	-20	-23
HOMESTEAD AFB	TO													
5000	0	-2	1	0	0	-6	-8	-1	1	-1	0	0	-6	-8
10000	-10	-9	1	-3	-5	-13	-15	9	8	-1	2	3	-3	-5
18000	-26	-24	0	-11	-14	-28	-31	22	21	0	9	11	0	-1
HOMESTEAD AFB	TO													
5000	2	1	1	1	1	-4	-6	-4	-2	-1	-1	-2	-9	-10
10000	0	0	1	1	0	-6	-8	-5	-4	-1	-3	-4	-11	-13
18000	-4	-5	1	2	-1	-11	-13	-13	-5	-2	-8	-7	-17	-20

*HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

**A—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWINDS												STANDARD DEVIATION					
		DIRECT						RETURN											
		JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT
PATRICK AFB																			
HOMESTEAD AFB	TO	5	4	4	4	4	-2	-3	-5	-5	-4	-4	-5	-11	-13	11	10	7	10
5000	4	0	4	4	3	1	-5	-7	-1	0	-3	-3	-2	-10	-11	12	12	0	11
10000	-6	-6	4	4	1	-1	-11	-14	0	1	-3	-2	-1	-10	-12	16	15	0	13
PITTSBURGH																			
HOMESTEAD AFB	TO	2	1	1	1	1	-4	-4	-3	-2	-1	-1	-2	-8	-10	10	10	7	9
5000	1	0	0	1	1	0	-7	-9	-4	-3	-1	-2	-3	-10	-12	12	12	0	11
10000	-1	0	0	0	0	-2	-12	-15	-11	-3	-2	-6	-5	-15	-18	16	16	0	15
18000	-5	-6	0	0	0	-2	-12	-15	-11	-3	-2	-6	-5	-15	-18	16	16	0	15
REGINA																			
HOMESTEAD AFB	TO	-6	-4	-1	-5	-4	-10	-11	4	3	1	4	2	-2	-3	9	9	6	0
5000	-4	-10	-5	-9	-10	-16	-18	-18	11	8	4	7	7	1	0	9	9	7	9
10000	-15	-20	-10	-18	-18	-28	-30	-30	16	13	8	12	11	4	2	13	13	0	12
18000	-27	-20	-10	-18	-18	-28	-30	-30	16	13	8	12	11	4	2	13	13	0	12
SCOTT AFB																			
HOMESTEAD AFB	TO	-2	-2	0	-1	-1	-8	-9	0	1	0	1	0	-5	-7	11	10	7	9
5000	-2	-8	0	-3	-5	-13	-15	-15	6	6	0	2	3	-3	-5	11	11	0	11
10000	-10	-19	-4	-11	-13	-25	-29	-29	10	12	3	6	7	-2	-4	16	16	0	15
18000	-23	-19	-4	-11	-13	-25	-29	-29	10	12	3	6	7	-2	-4	16	16	0	15
SELFIDGE AFB																			
HOMESTEAD AFB	TO	0	0	0	0	0	-7	-7	-2	0	0	0	0	-1	-7	10	10	7	9
5000	0	-3	0	0	-2	-9	-11	-11	-1	0	0	-1	-1	-8	-10	11	11	0	11
10000	-4	-10	-1	-3	-6	-16	-19	-19	-5	0	0	-3	-2	-11	-14	16	16	0	15
18000	-11	-10	-1	-3	-6	-16	-19	-19	-5	0	0	-3	-2	-11	-14	16	16	0	15
SHAW AFB																			
HOMESTEAD AFB	TO	4	2	3	1	2	-3	-5	-5	-3	-2	-1	-3	-10	-11	11	10	7	10
5000	4	0	2	2	1	-4	-7	-7	-3	-2	-1	-2	-2	-10	-11	12	12	0	11
10000	0	0	2	2	1	-4	-7	-7	-3	-2	-1	-2	-2	-10	-11	12	12	0	11
18000	-5	-5	2	1	-1	-11	-14	-14	-6	-3	-2	-4	-4	-13	-16	17	16	0	14
WESTOVER AFB																			
HOMESTEAD AFB	TO	5	4	3	3	3	-2	-3	-6	-5	-3	-3	-5	-11	-12	10	10	7	9
5000	5	7	4	4	4	-2	-3	-3	-11	-11	-4	-6	-8	-16	-18	12	12	0	10
10000	5	7	4	4	4	-2	-3	-3	-11	-11	-4	-6	-8	-16	-18	12	12	0	10
18000	9	5	4	9	6	-2	-4	-4	-24	-15	-6	-15	-14	-26	-29	16	16	0	15
Wurtsmith																			
HOMESTEAD AFB	TO	0	0	0	0	0	-6	-8	-1	0	0	0	-1	-7	-8	10	10	7	9
5000	0	-3	0	0	-2	-9	-11	-11	-1	0	0	-1	-1	-8	-9	11	11	0	10
10000	-5	-10	-2	-4	-7	-17	-20	-20	-5	0	0	-3	-2	-11	-14	16	16	0	15
18000	-12	-10	-2	-4	-7	-17	-20	-20	-5	0	0	-3	-2	-11	-14	16	16	0	15
IMAGINE																			
HOMESTEAD AFB	TO	4	6	5	-2	3	-2	-4	-4	-7	-5	2	-4	-9	-11	7	8	0	7
5000	4	17	14	6	6	10	4	2	-20	-15	-6	-7	-13	-20	-21	9	8	0	9
10000	31	21	7	11	16	7	5	5	-40	-26	-8	-13	-20	-34	-37	12	11	0	10
18000	31	21	7	11	16	7	5	5	-40	-26	-8	-13	-20	-34	-37	12	11	0	10

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

FOUR VALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND SO												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	00450	075	AB5	JAN	APR	JUL	OCT	00450	075	AB5	JAN	APR	JUL	OCT
HONG KONG	IWO JIMA AB																	
5000	5	6	1	-4	1	-3	-5	-5	-4	-2	4	-3	-8	-10	7	6	8	1496 N.M.I.
10000	20	7	3	3	7	0	0	-20	-9	-3	-3	-9	-16	-18	8	7	8	6
10000	36	26	1	8	16	4	2	-38	-27	-1	-9	-18	-33	-36	10	9	8	8
HONG KONG	KADENA AB																	
5000	3	7	3	-4	1	-4	-5	-3	-7	-4	4	-3	-9	-11	6	8	9	779 N.M.I.
10000	19	14	5	4	10	3	1	-20	-14	-5	-4	-11	-19	-21	2	8	10	7
10000	35	25	1	9	16	4	1	-37	-27	-2	-9	-18	-33	-36	12	11	9	9
HONG KONG	KIMPO AB																	
5000	3	5	5	-3	2	-3	-4	-3	-5	-6	3	-3	-9	-10	7	8	9	1121 N.M.I.
10000	8	8	4	1	5	0	-2	-13	-10	-5	-2	-8	-15	-16	9	8	9	7
10000	15	10	7	6	9	1	0	-29	-18	-7	-9	-15	-25	-28	12	11	9	10
HONG KONG	MANGALAY																	
5000	-1	-6	-4	3	-2	-7	-9	2	4	3	-3	1	-3	-4	6	7	8	1007 N.M.I.
10000	-12	-11	-6	-2	-8	-14	-16	12	11	4	3	8	2	0	7	9	7	6
10000	-28	-19	2	-7	-13	-24	-27	27	18	-2	7	11	1	0	11	9	8	8
HONG KONG	MEDAN																	
5000	0	-3	-11	0	-3	-8	-10	0	4	11	0	3	-1	-2	5	5	6	1444 N.M.I.
10000	-1	-2	-5	-2	-3	-7	-9	1	2	5	2	2	-1	-2	6	5	7	6
10000	-3	0	1	0	0	-5	-7	2	0	-1	0	0	-5	-6	8	7	6	6
HONG KONG	MISMA AB																	
5000	6	6	5	0	4	0	-2	-7	-7	-5	-1	-6	-11	-12	7	7	7	1741 N.M.I.
10000	17	14	6	9	11	5	3	-21	-15	-7	-10	-14	-20	-22	9	8	8	7
10000	27	19	8	14	16	8	6	-30	-26	-9	-19	-23	-34	-36	11	10	8	10
HONG KONG	PENANG																	
5000	0	-4	-11	1	-3	-9	-10	1	4	11	-1	3	-1	-2	5	5	6	1388 N.M.I.
10000	-1	-2	-5	-2	-3	-7	-9	1	3	5	2	2	-1	-2	6	5	7	6
10000	-4	-1	1	0	-1	-4	-7	2	0	-1	0	0	-5	-6	8	7	6	6
HONG KONG	PEIPING																	
5000	0	1	4	-4	0	-5	-7	0	-1	-5	4	-1	-6	-8	7	8	9	1642 N.M.I.
10000	-6	-1	0	-5	-3	-9	-11	1	0	-1	5	0	-5	-7	9	8	9	7
10000	-9	-5	4	-3	-3	-11	-13	-7	-3	-5	0	-4	-11	-13	12	11	9	10
HONG KONG	PUSAN EAST																	
5000	4	6	6	-3	3	-3	-4	-4	-6	-4	3	-4	-10	-11	7	8	9	1097 N.M.I.
10000	13	11	5	4	8	1	0	-17	-13	-6	-5	-11	-18	-19	9	8	9	7
10000	25	16	7	9	13	5	3	-36	-23	-8	-12	-19	-31	-34	12	11	9	10

OVERSOUNDING--COMPUTED FOR A 120-KT AIRSPEED.

00--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	F R M I V A L E N T H E A D W I N D S																		STANDARD DEVIATION
	WINDY						RETURN												
	JAN	APR	JUL	OCT	00450	075	AB5	JAN	APR	JUL	OCT	00450	075	AB5	JAN	APR	JUL	OCT	
HONG KONG																			
5000		TO	-4	-10	2	-4	-9	-10											
10000	-2	-3	-5	-3	0	-3	-8	-10											
18000	-7	-2	0	-3			-9	-11											
HONG KONG																			
5000	3	TO	6	6	4	2	-4	-5											
10000	9	8	5	1	5	5	-1	-3											
18000	18	12	6	6	9	2	0	0											
HONG KONG																			
5000	0	TO	-1	-9	-1	-3	-4	-9											
10000	0	-1	-5	-2	-2	-7	-9	-9											
18000	-3	0	3	3	-1	-5	-7	-7											
HONG KONG																			
5000	2	TO	7	4	-4	2	-4	-4											
10000	17	13	5	3	9	2	3	3											
18000	31	22	0	0	14	3	0	0											
HONG KONG																			
5000	5	TO	7	5	0	4	-1	-2											
10000	20	16	6	0	12	5	3	3											
18000	36	25	0	15	20	10	0	0											
HUNTER AAF																			
5000	-9	TO	-8	-3	-4	-6	-14	-16											
10000	-21	-16	-4	-6	-11	-22	-25	-25											
18000	-37	-30	-7	-19	-22	-36	-42	-42											
HUNTER AAF																			
5000	-5	TO	-4	-3	-2	-4	-10	-12											
10000	-4	-3	-3	-3	-3	-10	-12	-12											
18000	-6	-4	-2	-4	-4	-13	-16	-16											
HUNTER AAF																			
5000	-9	TO	-6	-4	-4	-7	-12	-13											
10000	-20	-13	-0	-12	-13	-20	-22	-22											
18000	-35	-25	-16	-24	-24	-35	-37	-37											
HUNTER AAF																			
5000	-11	TO	-9	-4	-5	-7	-15	-17											
10000	-23	-17	-5	-8	-13	-23	-26	-26											
18000	-41	-32	-7	-21	-29	-43	-46	-46											

HEADWINDS--COMPUTED FOR A 1000 FT ALTITUDE.
 00450--DEPARTS AT 00450 HOURS. 075--ARRIVES AT 075 HOURS. 10000--DEPARTS AT 10000 HOURS. 18000--ARRIVES AT 18000 HOURS.

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STANDARD DEVIATION

REF. IN EFF.	MONTHS												STANDARD DEVIATION
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
HUNTER AAF													
5000	-2	-2	-1	-1	-2	-1	-1	-1	-1	-1	-1	-1	13
10000	-7	-3	-1	-1	-4	-1	-1	-1	-1	-1	-1	-1	12
15000	-14	-13	-3	-3	-8	-3	-3	-3	-3	-3	-3	-3	14
HUNTER AAF													20
5000	7	5	4	4	4	4	4	4	4	4	4	4	11
10000	12	10	7	7	9	7	7	7	7	7	7	7	13
15000	22	11	9	10	13	9	9	9	9	9	9	9	10
HUNTER AAF													10
5000	-7	-6	-3	-3	-5	-10	-12	-12	-12	-12	-12	-12	9
10000	-20	-16	-4	-4	-12	-20	-22	-22	-22	-22	-22	-22	14
15000	-38	-31	-7	-19	-23	-37	-40	-40	-40	-40	-40	-40	13
HUNTER AAF													9
5000	7	5	3	3	4	4	4	4	4	4	4	4	12
10000	12	11	5	6	6	6	6	6	6	6	6	6	14
15000	22	12	7	14	12	1	-1	-1	-1	-1	-1	-1	10
HUNTER AAF													12
5000	-10	-8	-4	-4	-7	-14	-14	-14	-14	-14	-14	-14	13
10000	-22	-17	-3	-3	-13	-23	-23	-23	-23	-23	-23	-23	14
15000	-40	-31	-8	-20	-23	-40	-44	-44	-44	-44	-44	-44	20
HUNTER AAF													12
5000	-5	-4	-1	0	-3	-9	-10	-10	-10	-10	-10	-10	9
10000	-10	-9	0	-2	-5	-12	-13	-13	-13	-13	-13	-13	13
15000	-25	-19	2	-9	-12	-24	-26	-26	-26	-26	-26	-26	10
HUNTER AAF													9
5000	-9	-8	-3	-3	-6	-13	-13	-13	-13	-13	-13	-13	12
10000	-17	-12	-7	-6	-11	-20	-22	-22	-22	-22	-22	-22	13
15000	-31	-22	-11	-19	-20	-33	-36	-36	-36	-36	-36	-36	10
HUNTER AAF													10
5000	-10	-8	-4	-7	-7	-14	-14	-14	-14	-14	-14	-14	11
10000	-19	-13	-8	-11	-13	-21	-23	-23	-23	-23	-23	-23	10
15000	-33	-23	-14	-22	-22	-34	-37	-37	-37	-37	-37	-37	16
HUNTER AAF													10
5000	-7	-6	-3	-3	-5	-10	-12	-12	-12	-12	-12	-12	9
10000	-20	-15	-4	-4	-12	-20	-22	-22	-22	-22	-22	-22	14
15000	-38	-30	-10	-20	-24	-36	-40	-40	-40	-40	-40	-40	13

HEADINGS--COMPUTED FOR A 120-KT AIRSPEED.
004--DEVIATES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT DEVIABILITIES.
THUS SIGN. NOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWINDS IN KNOTS FOR GREAT CIRCLE AIR ROUTES																STANDARD DEVIATION
	DIRECT												RETURN				
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	A75	A85			
HUNTER AAF	NEW CUMBERLAND																
5000	5	3	2	2	2	2	-4	-6	-7	-4	-2	-3	-4	-12	-14	534 N.M.I.	
10000	7	7	3	4	5	5	-3	-5	-14	-11	-4	-5	-8	-18	-20	12 12 0 11	
18000	13	5	4	10	7	7	-3	-6	-30	-17	-6	-17	-16	-31	-35	14 14 9 13	
HUNTER AAF	NEW ORLEANS																
5000	-10	-8	-3	-4	-4	-4	-14	-15	10	8	4	4	6	0	-2	11 11 0 10	
10000	-21	-17	-3	-6	-11	-22	-24	-24	20	16	4	6	10	2	0	13 13 0 12	
18000	-39	-30	-2	-10	-21	-30	-42	-42	36	28	2	17	19	5	2	18 18 10 16	
HUNTER AAF	NIAGARA FALLS																
5000	1	0	0	1	0	0	-5	-8	-4	-1	0	-2	-2	-9	-11	673 N.M.I.	
10000	0	0	1	2	0	0	-7	-9	-9	-5	-2	-4	-5	-14	-16	12 12 0 11	
18000	0	-3	0	3	0	0	-11	-14	-21	-8	-3	-12	-10	-24	-27	14 14 9 13	
HUNTER AAF	CKNAPO AFB																
5000	-7	-6	-3	-2	-5	-9	-11	-11	6	5	3	1	3	0	-1	8 7 5 6	
10000	-19	-15	-4	-8	-11	-19	-20	-20	17	14	4	7	9	3	2	9 8 6 8	
18000	-37	-30	-9	-19	-23	-36	-39	-39	33	27	8	16	19	9	7	14 13 7 12	
HUNTER AAF	PATRICK AFB																
5000	-5	-2	-2	0	-3	-10	-12	-12	4	1	2	0	1	-5	-7	228 N.M.I.	
10000	-2	-1	0	-1	-1	-9	-11	-11	-1	0	1	0	0	-8	-10	12 11 0 11	
18000	-2	0	-1	-2	-2	-12	-14	-14	-9	-8	1	-1	-4	-15	-16	13 13 0 12	
HUNTER AAF	PITTSBURGH																
5000	1	0	0	0	0	-7	-8	-8	-3	-1	0	-1	-2	-9	-11	511 N.M.I.	
10000	0	0	0	1	0	-8	-10	-10	-7	-4	-1	-3	-4	-13	-15	12 12 0 11	
18000	-2	-5	0	2	-1	-13	-16	-16	-10	-7	-2	-10	-9	-22	-25	14 14 9 13	
HUNTER AAF	PEORIA																
5000	-10	-6	-4	-7	-7	-13	-15	-15	-9	5	3	6	5	0	-2	20 20 11 19	
10000	-19	-13	-9	-11	-13	-20	-22	-22	-7	16	8	9	10	3	2	12 12 0 11	
18000	-32	-22	-15	-22	-22	-33	-36	-36	-10	21	16	17	15	7	5	10 10 8 10	
HUNTER AAF	SCOTT AFB																
5000	-9	-7	-3	-4	-6	-14	-16	-16	8	6	3	4	4	-2	-4	1520 N.M.I.	
10000	-20	-15	-5	-7	-12	-21	-24	-24	16	12	5	6	9	1	-1	10 10 7 9	
18000	-35	-27	-9	-19	-21	-36	-40	-40	22	20	8	14	14	3	1	10 10 8 10	
HUNTER AAF	SELFRIDGE AFB																
5000	-2	-2	-1	0	-2	-9	-11	-11	0	0	1	0	0	-7	-9	506 N.M.I.	
10000	-4	-4	-1	0	-3	-12	-14	-14	0	0	0	0	0	-8	-10	13 12 0 11	
18000	-13	-12	-3	-5	-7	-20	-24	-24	-4	0	0	-4	-2	-14	-16	13 13 9 13	

* HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 **--DEFINIES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION									
	DIRECT					RETURN					JAN					JAN				
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85		JAN	APR	JUL	OCT	
HUNTER AAF	TO																			
5000	7	5	4	4	4	-2	-4	-9	-7	-4	-4	-6	-14	-16	736 N.M.I.	12	12	12	12	11
10000	13	11	6	7	8	0	-1	-19	-15	-7	-8	-12	-21	-24		14	14	14	14	11
18000	22	12	8	15	13	2	0	-37	-22	-10	-21	-21	-36	-40		19	19	19	19	18
HUNTER AAF	TO																			
5000	-2	-2	-1	0	-2	-9	-11	0	1	1	0	0	-6	-8	754 N.M.I.	12	12	12	12	10
10000	-7	-5	-2	-1	-4	-12	-14	0	0	1	0	0	-8	-10		13	13	13	13	12
18000	-14	-12	-4	-6	-9	-21	-24	-6	1	1	-3	-1	-13	-16		19	19	19	19	19
HUNTSVILLE	TO																			
5000	4	4	2	3	3	-4	-5	-5	-5	-2	-3	-4	-11	-13	363 N.M.I.	12	12	12	12	11
10000	12	10	2	3	6	-2	-4	-16	-12	-2	-4	-8	-18	-20		14	13	13	13	13
18000	19	19	5	10	11	1	-1	-31	-25	-6	-15	-10	-33	-36		19	19	19	19	17
HUNTSVILLE	TO																			
5000	-3	-1	-2	0	-2	-8	-10	1	0	2	0	0	-5	-6	659 N.M.I.	11	10	7	9	9
10000	2	2	-1	0	0	-6	-8	-5	-4	1	0	-2	-9	-11		12	11	8	11	11
18000	5	8	1	2	3	-5	-7	-16	-15	-1	-6	-9	-20	-23		16	16	9	14	14
HUNTSVILLE	TO																			
5000	-8	-6	-3	-6	-6	-12	-13	7	5	3	6	5	0	-1	1640 N.M.I.	9	8	7	9	8
10000	-20	-12	-8	-13	-13	-20	-22	19	11	7	12	11	5	3		10	9	7	9	9
18000	-35	-24	-16	-25	-24	-35	-38	29	19	15	21	20	11	9		15	14	9	14	14
HUNTSVILLE	TO																			
5000	-13	-10	-5	-5	-8	-17	-19	12	10	6	5	7	0	-2	265 N.M.I.	14	14	9	11	11
10000	-26	-19	-6	-11	-15	-26	-29	25	18	6	10	13	3	1		15	15	10	14	14
18000	-45	-34	-8	-24	-26	-44	-49	41	31	8	21	22	8	5		22	20	11	20	20
HUNTSVILLE	TO																			
5000	7	4	3	3	4	-3	-5	-9	-6	-3	-4	-6	-14	-16	352 N.M.I.	14	13	9	12	12
10000	13	8	5	6	7	-1	-3	-19	-12	-6	-7	-11	-21	-24		15	15	10	14	14
18000	20	10	6	11	10	-1	-4	-35	-20	-7	-18	-19	-35	-39		22	21	12	21	21
HUNTSVILLE	TO																			
5000	10	6	6	7	7	0	-1	-12	-8	-6	-8	-9	-16	-18	1127 N.M.I.	12	11	8	10	10
10000	20	13	10	11	13	5	3	-24	-16	-11	-13	-16	-25	-27		13	13	9	12	12
18000	32	17	14	21	20	9	6	-42	-25	-17	-27	-27	-40	-44		18	18	11	17	17
HUNTSVILLE	TO																			
5000	-7	-6	-4	-3	-5	-11	-12	6	6	4	3	4	0	-2	1270 N.M.I.	9	9	6	8	8
10000	-21	-16	-5	-9	-13	-21	-23	19	15	5	9	11	4	2		10	10	6	10	10
18000	-39	-31	-9	-20	-24	-36	-41	35	28	8	17	20	9	6		16	15	9	14	14

* HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

*** DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION			
	DIRECT						RETURN									
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
HUNTSVILLE 5000	13	9	6	6	8	0	-1	-14	-10	-5	-7	-9	-17	-19	13	12
10000	25	18	10	10	14	6	4	-28	-20	-10	-11	-17	-27	-30	14	14
18000	40	25	13	23	23	10	8	-47	-31	-14	-27	-28	-45	-49	20	20
664 N.M.I.																
HUNTSVILLE 5000	13	10	-5	-5	-8	-17	-19	12	10	5	5	7	0	-2	15	14
10000	-26	-19	-6	-11	-15	-27	-30	25	18	6	10	14	3	1	15	15
18000	-45	-34	-9	-24	-26	-44	-49	40	31	9	21	23	9	5	22	21
159 N.M.I.																
HUNTSVILLE 5000	-7	-7	-3	-1	-5	-10	-12	6	7	3	1	4	-1	-2	9	9
10000	-12	-9	-1	-3	-6	-13	-15	10	8	2	2	5	0	-1	9	9
18000	-25	-17	2	-9	-12	-23	-26	19	13	-2	7	7	-1	-3	13	12
1124 N.M.I.																
HUNTSVILLE 5000	-7	-5	-2	-4	-5	-13	-15	5	3	2	3	3	-4	-6	13	12
10000	-14	-10	-5	-9	-9	-19	-21	8	6	4	5	5	-2	-4	13	14
18000	-24	-18	-10	-18	-17	-31	-34	9	9	7	10	8	-3	-5	20	20
601 N.M.I.																
HUNTSVILLE 5000	-10	-6	-3	-7	-7	-14	-16	8	5	3	6	5	-1	-3	11	11
10000	-18	-12	-8	-12	-13	-21	-23	14	10	7	10	10	2	0	12	12
18000	-31	-21	-14	-22	-22	-34	-37	19	14	11	16	14	4	1	18	17
1042 N.M.I.																
HUNTSVILLE 5000	-7	-6	-3	-3	-5	-10	-12	6	5	3	2	3	-1	-2	9	9
10000	-20	-15	-6	-10	-13	-20	-22	18	14	5	9	11	4	3	10	9
18000	-38	-29	-11	-21	-24	-37	-40	33	25	11	18	20	10	8	16	15
1379 N.M.I.																
HUNTSVILLE 5000	12	8	5	5	7	0	-1	-13	-9	-5	-6	-8	-16	-18	13	12
10000	23	16	9	9	13	4	2	-26	-19	-9	-10	-16	-26	-29	14	14
18000	37	22	11	21	20	8	5	-46	-29	-13	-26	-27	-44	-48	20	20
579 N.M.I.																
HUNTSVILLE 5000	-10	-7	-4	-2	-6	-14	-16	5	6	6	2	4	-2	-4	13	12
10000	-16	-12	-4	-5	-9	-18	-21	13	10	4	4	7	-1	-3	13	14
18000	-31	-20	1	-12	-14	-30	-34	20	11	-1	6	7	-3	-6	19	19
324 N.M.I.																
HUNTSVILLE 5000	8	5	5	3	5	-2	-4	-10	-5	-4	-6	-7	-15	-17	13	12
10000	15	10	5	7	9	2	-1	-21	-13	-9	-9	-13	-22	-25	14	14
18000	22	11	4	14	12	1	-2	-37	-21	-11	-22	-22	-37	-41	21	20
625 N.M.I.																

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.
 **A—DEPOTES APPROXIMATE EQUIVALENT HEADWIND FOR INDICATED PER CENT PROBABILITIES.
 WINDS SIGN BEFORES—10, 21.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION					
	DIRECT																	
	JAN	APR	JUL	OCT	0050	A75	A85	JAN	APR	JUL	OCT	0050	A75	A85	JAN	APR	JUL	OCT
HUNTSVILLE	TO				OXNAFD AFB													1591 N.M.I.
5000	-6	-5	-3	-2	-5	-9	-11	6	5	3	1	3	-1	-2	0	0	5	7
10000	-18	-15	-5	-9	-12	-19	-21	17	14	5	0	10	4	2	10	9	7	9
18000	-37	-29	-11	-19	-23	-36	-39	32	26	10	17	19	10	0	15	14	0	13
HUNTSVILLE	TO				PATRICK AFB													497 N.M.I.
5000	1	2	0	2	1	-5	-7	-2	-3	0	-2	-2	-9	-11	11	11	0	10
10000	9	7	1	2	4	-3	-5	-12	-10	-1	-3	-6	-15	-17	13	13	0	12
18000	16	16	4	8	9	0	-2	-26	-22	-4	-12	-15	-20	-32	10	10	9	16
HUNTSVILLE	TO				PITTSBURGH													470 N.M.I.
5000	9	6	4	5	5	-1	-3	-11	-7	-4	-5	-7	-15	-17	13	13	9	11
10000	17	12	7	7	10	1	0	-23	-15	-8	-9	-14	-24	-26	14	15	10	14
18000	28	15	9	16	15	3	0	-41	-24	-10	-22	-23	-39	-43	21	21	12	20
HUNTSVILLE	TO				REGINA													1227 N.M.I.
5000	-10	-6	-3	-7	-7	-14	-16	8	5	3	6	5	-1	-3	11	11	0	10
10000	-18	-12	-8	-12	-13	-20	-22	15	10	7	10	10	3	1	11	11	9	11
18000	-30	-20	-14	-23	-21	-33	-36	20	14	12	17	15	5	3	17	16	10	14
HUNTSVILLE	TO				SCOTT AFB													200 N.M.I.
5000	-7	-5	-2	-4	-5	-13	-15	5	4	2	3	3	-4	-6	15	14	9	12
10000	-15	-12	-4	-7	-10	-20	-22	9	9	3	5	6	-3	-5	15	15	11	14
18000	-28	-22	-8	-17	-18	-33	-37	11	13	7	10	9	-2	-5	22	21	12	21
HUNTSVILLE	TO				SELEPRIDGE AFB													512 N.M.I.
5000	4	2	2	3	2	-5	-7	-7	-4	-2	-4	-5	-13	-15	14	13	9	11
10000	7	4	3	4	4	-4	-6	-14	-9	-5	-6	-9	-18	-20	14	15	10	14
18000	9	3	4	6	5	-6	-9	-28	-14	-6	-15	-15	-29	-33	21	21	12	20
HUNTSVILLE	TO				SNAW AFB													315 N.M.I.
5000	13	10	5	5	7	0	-1	-13	-10	-5	-5	-8	-16	-19	13	12	9	11
10000	25	19	6	7	13	3	1	-26	-20	-6	-8	-14	-26	-29	14	14	9	14
18000	40	31	9	20	23	9	6	-44	-34	-9	-23	-26	-43	-48	20	20	11	19
HUNTSVILLE	TO				WESTOVER AFB													807 N.M.I.
5000	12	8	6	7	7	1	0	-13	-9	-6	-7	-9	-16	-18	12	12	0	10
10000	23	17	10	10	14	5	3	-27	-19	-11	-12	-17	-27	-29	14	14	9	12
18000	38	22	13	23	22	10	7	-46	-29	-15	-27	-28	-43	-48	20	19	11	19
HUNTSVILLE	TO				HUNTSWORTH													610 N.M.I.
5000	2	1	1	2	1	-6	-8	-5	-2	-2	-3	-3	-11	-13	13	13	9	11
10000	4	2	2	3	2	-5	-7	-11	-6	-3	-5	-6	-15	-18	14	14	10	13
18000	3	0	1	2	1	-10	-13	-23	-11	-5	-12	-12	-26	-29	21	20	12	20

* HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION									
	DIPEY					M E A D M I N D S O					RETURN					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	ABS	JAN	APR	JUL	OCT	ABS	JAN	APR	JUL	OCT	ABS	JAN	APR	JUL	OCT	ABS
HUNTSVILLE																				
5000	-8	-6	-3	-6	-11	-13	7	5	3	5	4	0	-1	8	1679 N.M.I.	8	8	6	7	7
10000	-20	-12	-8	-12	-20	-22	18	11	7	11	11	5	3	9	1965 N.M.I.	9	9	7	9	9
18000	-35	-24	-16	-25	-35	-38	29	20	15	21	20	11	9	15	735 N.M.I.	15	14	9	14	14
HUNTSVILLE																				
5000	-7	-3	-2	-7	-5	-11	5	2	2	6	3	-2	-3	9	1965 N.M.I.	9	8	7	9	9
10000	-15	-9	-8	-12	-11	-17	12	7	7	10	9	3	2	8	735 N.M.I.	8	9	7	8	8
18000	-25	-16	-13	-19	-18	-27	16	11	10	14	12	4	2	13	1965 N.M.I.	13	12	9	12	12
IMAKUNI																				
5000	6	2	-2	0	0	-5	-6	-2	2	0	-1	-8	-10	10	735 N.M.I.	10	9	9	9	9
10000	18	8	0	2	6	-2	-22	-11	0	-4	-9	-19	-21	12	522 N.M.I.	12	11	10	10	10
18000	25	20	2	10	13	0	-42	-29	-4	-15	-22	-37	-41	15	334 N.M.I.	15	14	11	13	13
IMAKUNI																				
5000	-2	-4	-5	2	-2	-13	1	4	5	-3	1	-6	-7	10	522 N.M.I.	10	11	10	9	9
10000	-12	-15	-6	-7	-10	-21	5	13	5	6	7	-1	-3	13	334 N.M.I.	13	12	11	11	11
18000	-32	-17	-8	-9	-16	-31	12	5	7	4	6	-2	-4	15	506 N.M.I.	15	14	11	13	13
IMAKUNI																				
5000	-15	-6	-2	-9	-9	-16	15	5	2	9	7	0	-2	10	334 N.M.I.	10	12	10	10	10
10000	-29	-17	-5	-15	-17	-30	26	15	5	14	14	4	2	14	506 N.M.I.	14	13	12	12	12
18000	-47	-34	-11	-28	-30	-48	40	30	10	25	25	12	9	18	1980 N.M.I.	18	16	13	15	15
IMAKUNI																				
5000	9	6	4	7	6	0	-11	-7	-4	-7	-8	-15	-17	11	506 N.M.I.	11	11	9	11	11
10000	18	14	7	15	13	4	-24	-17	-8	-17	-17	-26	-28	13	1980 N.M.I.	13	13	11	12	12
18000	21	19	10	20	17	5	-37	-28	-11	-27	-26	-39	-42	18	165 N.M.I.	18	17	13	16	16
IMAKUNI																				
5000	-14	-7	-3	-8	-9	-17	14	6	3	8	7	1	0	8	426 N.M.I.	8	10	9	8	8
10000	-28	-18	-6	-15	-17	-29	27	17	5	15	15	6	4	11	1980 N.M.I.	11	11	10	11	11
18000	-47	-34	-13	-28	-30	-46	44	32	12	27	28	16	13	15	165 N.M.I.	15	14	11	12	12
IMAKUNI																				
5000	-14	-6	-3	-9	-7	-17	14	6	2	9	7	0	-2	14	165 N.M.I.	14	12	11	11	11
10000	-31	-20	-6	-15	-13	-32	30	18	6	15	16	6	3	14	1980 N.M.I.	14	14	12	13	13
18000	-51	-37	-13	-29	-32	-51	48	35	12	28	30	16	12	18	165 N.M.I.	18	17	14	15	15
IMAKUNI																				
5000	-3	-4	-7	3	-3	-9	3	4	7	-3	2	-2	-3	5	1980 N.M.I.	5	6	6	6	6
10000	-12	-11	-6	-4	-9	-15	10	10	5	4	7	2	1	7	1980 N.M.I.	7	6	7	7	7
18000	-27	-14	-4	-3	-13	-25	14	11	3	6	9	2	1	8	1980 N.M.I.	8	8	7	7	7

HEADWINDS--COMPUTED FOR A 120-KT AVERAGE.

A--DENOTES ANNUAL EQUIVALENT HEADWIND IN KNOTS INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION						
	DIRECY				RETURN														
	JAN	APR	JUL	OCT	00450	075	AB5	JAN	APR	JUL	OCT	00450	075	AB5	JAN	APR	JUL	OCT	
IMAKUNI 5000 10000 18000	TO SHANGHAI	-9	-6	-5	-2	-6	-13	-15	9	6	5	1	5	-1	-3	9	11	10	9
		-27	-19	-7	-12	-16	-26	-28	24	18	6	11	14	5	3	12	12	11	11
		-48	-34	-12	-22	-28	-43	-46	43	30	12	20	24	13	10	15	14	11	13
IMAKUNI 5000 10000 18000	TO TAIPEI	-4	-6	-5	2	-3	-10	-12	4	6	5	-2	2	-3	-5	9	9	9	8
		-19	-17	-6	-9	-13	-21	-23	14	15	6	7	10	3	1	11	10	10	10
		-40	-25	-9	-13	-20	-33	-37	28	18	9	10	15	6	4	14	12	10	11
IMAKUNI 5000 10000 18000	TO TOKYO	13	7	4	6	7	0	-1	-13	-7	-4	-6	-8	-15	-17	11	11	9	11
		30	21	4	17	18	8	6	-32	-22	-8	-17	-20	-31	-33	14	14	11	12
		46	37	14	31	31	17	14	-52	-40	-15	-34	-35	-50	-54	18	17	14	16
IMAKUNI 5000 10000 18000	TO KADENA AB	-7	-6	0	3	-3	-10	-12	7	6	0	-3	2	-4	-6	10	9	10	8
		-25	-9	-2	-4	-10	-20	-22	24	7	1	3	7	0	-2	10	10	10	10
		-45	-32	-3	-12	-22	-39	-43	43	31	2	11	20	5	3	13	12	10	12
IMAKUNI 5000 10000 18000	TO KIMPO AB	-9	-4	0	-3	-4	-10	-12	8	3	0	2	2	-3	-4	9	9	8	8
		-24	-13	-2	-7	-11	-21	-23	20	10	1	6	8	0	-1	11	10	9	10
		-44	-31	-6	-19	-25	-39	-42	30	24	4	15	17	6	4	14	13	10	12
IMAKUNI 5000 10000 18000	TO KWAJALEIN MS	-5	-10	-9	-8	-9	-12	-13	4	10	9	9	8	4	3	6	5	5	5
		-3	-3	-6	-7	-5	-9	-10	1	2	7	7	4	0	-1	11	10	9	10
		-11	6	-5	-4	-4	-10	-12	7	-7	5	4	2	-4	-6	9	7	7	7
IMAKUNI 5000 10000 18000	TO MISAWA AB	-1	1	4	2	1	-5	-6	0	-2	-4	-3	-3	-9	-11	10	9	8	10
		-5	0	3	2	0	-7	-9	-3	-3	-3	-5	-4	-11	-13	11	11	9	10
		-14	-7	2	-1	-5	-15	-18	-12	-7	-4	-8	-8	-18	-20	15	15	12	14
IMAKUNI 5000 10000 18000	TO PEIPING	-10	-5	-1	-4	-5	-11	-12	9	5	0	3	4	-1	-2	7	8	7	7
		-26	-15	-3	-10	-13	-22	-24	24	13	3	9	11	4	2	9	8	8	8
		-46	-32	-8	-22	-27	-40	-43	37	28	7	19	22	11	9	12	11	9	10
IMAKUNI 5000 10000 18000	TO PUSAN EAST	-7	-3	1	-1	-3	-9	-11	7	3	-1	1	2	-4	-5	9	9	9	9
		-24	-13	-1	-6	-11	-21	-23	20	10	0	4	7	0	-2	11	11	9	10
		-44	-31	-5	-18	-24	-39	-42	30	24	4	13	17	6	3	14	13	11	12

HEADWINDS—COMPUTED FOR 120-KT AIRSPEED.

0045—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS														STANDARD DEVIATION			
	DIRECT							RETURN										
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
IWO JIMA AB																		
5000	-6	-5	0	0	-3	-9	-11	6	5	0	0	2	-3	-4	0	0	0	0
10000	-27	-14	-3	-7	-12	-22	-24	26	12	2	6	10	2	0	10	9	9	8
18000	-68	-34	-5	-16	-25	-41	-45	43	32	5	15	22	9	6	12	11	9	10
IWO JIMA AB																		
5000	-6	-6	-1	4	-3	-9	-10	6	6	1	-3	2	-4	-5	0	0	0	0
10000	-24	-9	-3	-3	-9	-18	-21	23	6	2	3	7	0	-1	9	8	9	7
18000	-43	-31	-2	-10	-21	-37	-40	42	31	2	10	20	5	3	11	10	9	10
IWO JIMA AB																		
5000	-1	1	4	3	1	-5	-7	0	-2	-4	-3	-3	-9	-11	11	10	9	10
10000	-8	-2	3	2	-1	-9	-11	0	-1	-3	-3	-2	-10	-12	12	11	10	11
18000	-20	-11	1	-3	-3	-20	-23	-8	-4	-4	-5	-6	-16	-18	16	15	12	15
IWO JIMA AB																		
5000	0	-2	-5	-3	-3	-7	-8	0	2	5	3	2	-1	-2	6	5	6	6
10000	-4	-2	-3	-3	-4	-7	-8	3	2	3	3	2	-1	-2	6	5	6	6
18000	-8	-2	-2	-2	-4	-9	-10	5	1	2	1	2	-2	-3	7	6	7	7
IWO JIMA AB																		
5000	0	-4	-5	-7	-5	-9	-10	-1	3	5	7	3	-1	-2	7	7	6	6
10000	10	4	-2	-3	1	-4	-6	-12	-5	2	2	-3	-10	-11	8	7	6	7
18000	3	17	0	1	4	-3	-5	-14	-19	0	-2	-8	-18	-20	11	9	8	9
JACKSONVILLE																		
5000	-5	-5	-4	-3	-5	-11	-12	5	4	4	3	4	-2	-3	11	10	7	9
10000	-3	-2	-3	-3	-3	-10	-12	1	1	3	3	2	-4	-6	12	11	8	10
18000	-3	-2	-2	-3	-3	-12	-14	-3	-4	3	1	0	-10	-12	16	15	9	13
JACKSONVILLE																		
5000	-8	-7	-3	-4	-6	-13	-15	7	6	3	4	4	-2	-3	12	12	8	10
10000	-20	-15	-3	-7	-11	-21	-23	17	14	3	6	9	0	-1	13	13	9	12
18000	-37	-30	-6	-19	-22	-37	-41	29	25	6	16	17	5	3	18	18	10	17
JACKSONVILLE																		
5000	0	-1	0	0	-1	-3	-10	-1	0	0	0	0	-7	-9	12	12	8	11
10000	-5	-3	0	0	-2	-11	-13	-1	0	0	-1	-1	-9	-11	13	13	9	13
18000	-10	-10	-2	-3	-6	-18	-21	-9	-1	0	-3	-3	-14	-18	19	19	11	18
JACKSONVILLE																		
5000	7	5	4	4	4	-1	-3	-9	-6	-5	-5	-7	-13	-15	11	11	8	9
10000	12	10	6	7	8	1	0	-18	-13	-7	-9	-17	-20	-22	13	12	8	11
18000	21	11	8	15	12	3	0	-35	-21	-11	-22	-21	-34	-38	17	17	10	16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS														STANDARD DEVIATION			
	DIRECT				RETURN													
	JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT
JACKSONVILLE																		
	TO				LUKE AFB													1569 N.M.I.
5000	-6	-5	-2	-2	-4	-9	-10	5	5	2	2	3	-1	-2	0	0	5	7
10000	-19	-15	-2	-7	-11	-19	-21	10	14	2	7	9	2	1	9	9	6	9
18000	-37	-30	-4	-18	-22	-35	-38	33	27	4	16	10	7	4	14	13	7	12
JACKSONVILLE																		
	TO				MCGUIRE AFB													672 N.M.I.
5000	7	5	3	3	4	-2	-4	-9	-6	-3	-3	-6	-13	-15	12	11	8	11
10000	11	10	5	5	7	0	-2	-17	-14	-5	-6	-10	-19	-22	15	13	9	12
18000	19	11	6	13	11	0	-1	-33	-21	-7	-18	-18	-33	-37	19	19	10	18
JACKSONVILLE																		
	TO				MEMPHIS													504 N.M.I.
5000	-8	-7	-2	-4	-5	-13	-15	6	6	3	4	4	-2	-4	12	12	8	10
10000	-19	-14	-3	-6	-10	-20	-23	16	12	3	5	8	0	-2	13	13	9	13
18000	-35	-28	-6	-17	-20	-35	-39	26	23	6	14	15	4	1	19	18	10	17
JACKSONVILLE																		
	TO				MEXICO CITY													1155 N.M.I.
5000	-3	-5	0	0	-2	-7	-9	2	5	0	0	1	-3	-4	0	0	5	7
10000	-9	-8	0	-2	-5	-11	-12	8	7	0	2	3	-1	-3	8	8	6	7
18000	-23	-18	3	-8	-11	-22	-25	20	16	-3	7	8	-1	-3	12	11	6	10
JACKSONVILLE																		
	TO				MINN-ST PAUL													1025 N.M.I.
5000	-7	-5	-2	-4	-5	-12	-14	5	4	2	3	3	-3	-4	11	11	8	10
10000	-15	-11	-5	-7	-10	-18	-20	10	8	4	5	6	0	-2	12	12	9	11
18000	-28	-20	-10	-17	-18	-30	-33	13	12	8	10	10	0	-1	17	17	10	16
JACKSONVILLE																		
	TO				MINOT AFB													1398 N.M.I.
5000	-9	-6	-3	-6	-6	-13	-14	7	5	3	5	4	-1	-2	10	10	7	9
10000	-18	-12	-7	-10	-12	-19	-21	14	9	6	8	8	2	0	11	11	8	10
18000	-31	-22	-13	-21	-21	-32	-35	19	15	10	15	14	5	3	16	15	9	15
JACKSONVILLE																		
	TO				MELLIS AFB													1701 N.M.I.
5000	-6	-5	-2	-2	-4	-9	-10	5	4	2	2	3	-1	-2	0	0	5	7
10000	-19	-14	-4	-8	-11	-18	-20	17	13	4	7	9	3	2	9	9	6	8
18000	-36	-29	-8	-19	-22	-35	-38	32	26	8	16	19	9	7	14	13	8	12
JACKSONVILLE																		
	TO				NEW CUMBERLAND													633 N.M.I.
5000	5	3	2	2	2	-4	-5	-7	-4	-2	-2	-4	-11	-13	12	11	8	11
10000	7	6	3	4	4	-3	-5	-13	-11	-4	-5	-8	-17	-19	14	13	9	12
18000	12	5	4	9	6	-3	-6	-29	-16	-6	-16	-16	-29	-33	19	19	10	18
JACKSONVILLE																		
	TO				NEW ORLEANS													437 N.M.I.
5000	-8	-8	-2	-4	-6	-13	-15	8	7	3	4	5	-1	-3	11	11	8	10
10000	-19	-16	-2	-6	-10	-20	-23	19	15	3	5	9	1	0	12	13	8	12
18000	-37	-30	-2	-18	-21	-37	-40	35	28	2	16	18	5	2	17	17	9	16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION			
	DIRECT						RETURN									
	JAN	APR	JUL	OCT	00450	A75	A05	JAN	APR	JUL	OCT	00450		A75	A05	
NIAGARA FALLS														772 N.M.I.		
JACKSONVILLE	TO	0	0	0	0	-6	-7	-4	-2	0	-2	-2	-9	-11	12	11
5000	2	0	0	0	0	-6	-7	-9	-6	-2	-4	-5	-14	-16	13	13
10000	1	1	1	2	1	-6	-8	-21	-9	-3	-12	-11	-23	-27	19	19
18000	1	-2	1	4	0	-10	-13									11 16
CINAFD AFB														1901 N.M.I.		
JACKSONVILLE	TO	-5	-2	-1	-4	-8	-9	5	4	2	1	2	-1	-2	7	7
5000	-6	-1	-3	-7	-10	-18	-19	16	13	3	7	9	3	1	9	8
10000	-10	-14	-3	-7	-10	-18	-19	32	26	6	15	10	8	6	14	12
18000	-36	-29	-7	-17	-21	-34	-37									7 11
PITTSBURGH														609 N.M.I.		
JACKSONVILLE	TO	0	0	0	0	-6	-8	-4	-2	0	-1	-2	-9	-11	12	11
5000	2	0	0	0	0	-6	-8	-7	-5	-1	-3	-4	-13	-15	13	13
10000	0	0	1	1	0	-7	-9	-19	-8	-2	-10	-9	-22	-25	19	19
18000	0	-3	0	2	0	-11	-14									11 16
REGINA														1503 N.M.I.		
JACKSONVILLE	TO	-6	-3	-6	-6	-12	-14	7	4	3	5	4	-1	-2	13	9
5000	-9	-12	-8	-11	-13	-20	-21	14	9	7	9	9	3	1	10	10
10000	-10	-12	-8	-11	-13	-21	-21	19	15	11	15	14	6	3	15	14
18000	-30	-21	-13	-21	-31	-34	-34									9 14
SCOTT AFB														630 N.M.I.		
JACKSONVILLE	TO	-5	-2	-4	-5	-12	-14	5	4	2	3	3	-3	-5	12	12
5000	-7	-12	-3	-6	-9	-18	-21	11	9	3	4	6	-1	-3	13	13
10000	-16	-24	-7	-16	-18	-32	-36	16	16	6	11	11	0	-1	19	18
18000	-30	-24	-7	-16	-18	-32	-36									10 17
SELFPRIDGE AFB														733 N.M.I.		
JACKSONVILLE	TO	-1	0	0	-1	-8	-10	-1	0	0	0	0	-7	-9	12	11
5000	-1	-3	-1	0	-2	-10	-12	-2	-1	0	-1	-1	-9	-11	13	13
10000	-4	-10	-2	-3	-6	-13	-21	-10	-1	0	-4	-3	-15	-18	19	19
18000	-10	-10	-2	-3	-6	-13	-21									11 16
SHAW AFB														222 N.M.I.		
JACKSONVILLE	TO	3	2	1	2	-4	-6	-7	-4	-2	-1	-4	-11	-13	12	12
5000	6	5	2	2	3	-4	-6	-10	-8	-2	-3	-6	-15	-17	14	14
10000	5	3	2	5	3	-6	-9	-21	-13	-2	-10	-10	-24	-27	19	19
18000	6	3	2	5	3	-6	-9									10 16
WESTOVER AFB														832 N.M.I.		
JACKSONVILLE	TO	5	4	3	4	-2	-3	-9	-6	-4	-4	-6	-13	-15	12	11
5000	7	5	4	6	7	0	-1	-18	-14	-6	-7	-11	-20	-22	13	13
10000	11	11	5	14	12	1	0	-34	-21	-9	-20	-20	-34	-37	18	18
18000	20	11	7	14	12	1	0									10 17
MURTSWORTH														847 N.M.I.		
JACKSONVILLE	TO	-1	0	0	-1	-3	-10	-1	0	0	0	0	-7	-9	12	11
5000	-1	-4	-1	0	-3	-11	-13	-1	0	0	-1	-1	-9	-11	13	13
10000	-5	-10	-3	-4	-7	-13	-21	-8	0	0	-4	-3	-14	-17	16	16
18000	-12	-10	-3	-4	-7	-13	-21									10 16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION					
	DIRECT				EQUIVALENT								RETURN					
	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT
JOHNSTON ISLAND TO KWAJALEIN MS																		
5000	12	15	14	13	13	10	9	-13	-14	-13	-13	-14	-17	-18	1415 N.M.I.			
10000	6	9	10	10	9	5	4	-6	-6	-10	-10	-9	-13	-14	6	5	4	4
18000	5	2	6	6	4	0	-1	-6	-2	-6	-6	-6	-10	-12	9	7	6	6
JOHNSTON ISLAND TO MIDWAY ISLAND																		
5000	4	6	4	3	4	0	-2	-5	-6	-5	-3	-5	-10	-12	816 N.M.I.			
10000	-3	3	3	-1	0	-5	-7	2	-3	-3	0	-1	-7	-9	10	7	7	7
18000	-15	-8	-1	-3	-6	-15	-17	11	7	1	2	4	-2	-4	11	8	8	10
JOHNSTON ISLAND TO PAGO PAGO																		
5000	3	0	0	0	0	-1	-2	-4	0	-1	-1	-2	-5	-5	1845 N.M.I.			
10000	-1	3	1	1	1	-2	-3	1	-3	-1	-1	-2	-5	-5	4	4	4	3
18000	0	0	0	0	0	-4	-5	0	0	0	0	-1	-5	-6	7	6	6	5
JOHNSTON ISLAND TO WAKE ISLAND																		
5000	7	12	13	13	11	7	6	-7	-11	-12	-13	-12	-15	-16	1367 N.M.I.			
10000	2	7	8	8	6	2	1	-2	-6	-7	-7	-6	-10	-11	7	5	4	5
18000	-8	-4	5	4	0	-7	-9	6	3	-5	-4	-1	-7	-9	8	6	5	5
JUNEAU TO KODIAK																		
5000	0	-2	-2	-3	-2	-9	-11	-1	1	1	2	0	-6	-8	569 N.M.I.			
10000	-8	-3	-5	-6	-4	-15	-17	7	2	4	4	4	-4	-6	13	10	9	10
18000	-19	-11	-10	-16	-14	-27	-30	15	8	8	12	10	-1	-5	14	11	11	13
JUNEAU TO LARSON AFB																		
5000	-1	-3	0	-1	-1	-9	-9	0	2	0	0	0	-6	-7	868 N.M.I.			
10000	6	3	3	0	2	-4	-6	-9	-4	-4	-2	-5	-13	-15	11	9	7	10
18000	13	4	6	7	7	-4	-6	-19	-9	-9	-14	-13	-25	-28	13	11	9	11
JUNEAU TO LUKE AFB																		
5000	-2	-2	0	-2	-2	-4	-8	1	2	0	1	0	-3	-4	1742 N.M.I.			
10000	5	3	1	0	2	-3	-5	-8	-4	-2	-1	-4	-10	-12	8	7	5	7
18000	11	4	3	6	5	-3	-5	-19	-10	-6	-12	-12	-21	-24	10	9	7	8
JUNEAU TO MINN-ST PAUL																		
5000	7	3	2	8	4	0	-2	-9	-3	-3	-8	-6	-12	-14	1704 N.M.I.			
10000	16	9	9	14	11	6	4	-17	-10	-10	-15	-13	-19	-21	9	8	7	9
18000	24	14	13	20	17	8	6	-27	-17	-15	-23	-21	-30	-32	9	8	7	9
JUNEAU TO MINOT AFB																		
5000	6	2	2	7	4	-1	-3	-8	-2	-2	-7	-5	-11	-13	1321 N.M.I.			
10000	15	8	8	13	10	4	3	-16	-9	-8	-14	-12	-19	-20	10	9	7	9
18000	23	13	11	19	16	7	4	-26	-15	-13	-22	-19	-29	-31	10	9	8	9
															14	13	11	14

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADINGS												STANDARD DEVIATION					
	DIRECT						RETURN						JAN APR JUL OCT					
	JAN	APR	JUL	OCT	000	075	AB5	JAN	APR	JUL	OCT	000	075	AB5	JAN	APR	JUL	OCT
JUNEAU																		
5000	-2	-2	0	-2	-2	-6	-8	1	2	3	2	0	-3	-4	8	7	5	7
10000	5	2	1	0	1	-4	-6	-8	-4	-2	-1	-4	-10	-12	11	9	7	9
18000	11	3	4	5	5	-3	-6	-19	-9	-7	-11	-12	-22	-24	16	15	11	14
JUNEAU																		
5000	-1	-2	1	-1	-1	-6	-7	0	2	-1	1	0	-4	-6	9	7	6	7
10000	3	1	1	-1	0	-4	-7	-6	-3	-1	0	-3	-9	-11	11	10	7	9
18000	9	1	4	1	3	-6	-2	-17	-9	-7	-9	-10	-20	-23	17	15	11	15
JUNEAU																		
5000	4	3	4	2	3	-2	-4	-5	-3	-4	-2	-4	-10	-12	11	8	3	9
10000	-3	3	3	5	3	-8	-8	2	-3	3	-5	-2	-9	-11	12	10	9	10
18000	-10	1	-2	0	-3	-13	-16	6	-4	0	-2	0	-10	-13	17	15	13	14
JUNEAU																		
5000	6	2	2	7	4	-2	-3	-7	-2	-1	-7	-5	-11	-13	10	9	8	10
10000	14	8	8	13	10	4	2	-16	-3	-8	-14	-12	-19	-20	11	9	8	9
18000	22	12	10	19	15	5	3	-25	-15	-12	-21	-18	-29	-31	15	14	12	14
JUNEAU																		
5000	-2	-2	-6	-4	-4	-10	-11	1	2	5	3	2	-2	-4	10	8	7	9
10000	-10	-4	-7	-8	-8	-15	-17	8	2	6	6	5	-1	-3	12	10	9	10
18000	-18	-11	-12	-15	-14	-24	-27	14	7	9	11	10	0	-1	16	14	13	14
JUNEAU																		
5000	1	1	0	2	1	-4	-5	-1	-1	-1	-3	-2	-7	-8	8	7	7	8
10000	0	3	1	3	1	-3	-4	0	-3	-1	-4	-3	-8	-9	8	7	7	7
18000	-1	4	2	4	2	-5	-7	-1	-6	-3	-6	-5	-12	-14	12	11	10	10
JUNEAU																		
5000	-1	-3	0	-2	-2	-5	-10	0	3	3	1	0	-5	-7	11	9	7	10
10000	4	2	3	-1	1	-3	-7	-7	-4	-4	-1	-4	-12	-14	14	11	9	11
18000	11	2	6	6	6	-4	-8	-19	-8	-9	-13	-12	-24	-27	19	17	14	17
JUNEAU																		
5000	5	4	2	9	4	-1	-3	-6	-4	-2	-10	-6	-13	-15	10	10	9	11
10000	8	6	4	11	7	0	-1	-9	-6	-5	-11	-8	-15	-17	12	10	9	10
18000	12	12	7	15	11	1	-1	-15	-14	-5	-16	-14	-24	-26	17	15	13	14
KADENA AP																		
5000	-7	3	3	-5	-2	-5	-10	3	0	-2	5	0	-6	-7	9	10	10	9
10000	-11	0	1	-3	-3	-11	-14	3	-4	-2	1	-1	-5	-10	12	11	11	11
18000	-14	-14	1	-3	-10	-20	-23	-3	2	-3	3	0	-6	-11	15	13	11	12

HEADINGS—COMPUTED FOR A 120-KT AIRSPEED.
 —AB5—DENOTES ANNUAL EQUIVALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.
 —0000—DENOTES HEADINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	MONTHLY AVERAGE HEADWIND IN KNOTS												STANDARD DEVIATION					
	JAN	APR	JUL	OCT	00050	A75	A05	JAN	APR	JUL	OCT	00050	A75	A05	JAN	APR	JUL	OCT
KADENA AB																		
5000	-2	-7	-3	3	-3	-3	-9	3	7	3	-3	2	-2	-4	6	6	1750 N.M.	
10000	-18	-13	-6	-3	-11	-17	-10	17	13	5	3	9	3	1	7	6	7	
18000	-37	-26	0	-10	-10	-32	-34	35	24	0	10	16	4	1	9	0	7	
KADENA AB																		
5000	5	5	5	2	4	-1	-3	-7	-6	-5	-2	-6	-12	-13	9	9	1070 N.M.	
10000	12	14	6	11	10	3	1	-19	-16	-7	-12	-14	-22	-23	11	11	9	
18000	18	14	6	12	13	4	2	-36	-24	-10	-19	-22	-33	-36	14	15	11	
KADENA AB																		
5000	-8	-4	0	-5	-5	-11	-12	7	3	0	5	3	-1	-3	8	9	970 N.M.	
10000	-22	-10	-2	-11	-12	-20	-22	19	7	1	10	9	1	0	10	9	7	
18000	-37	-27	-4	-19	-22	-34	-37	24	21	2	15	15	5	3	13	12	11	
KADENA AB																		
5000	0	1	4	-4	0	-7	-9	0	-2	-4	4	0	-8	-9	10	10	200 N.M.	
10000	-4	6	3	1	1	-4	-9	-3	-9	-4	-2	-5	-13	-15	12	12	9	
18000	-6	-6	4	-2	-2	-12	-14	-16	-5	-5	-2	-7	-17	-19	15	14	11	
KADENA AB																		
5000	-3	-3	-7	4	-3	-7	-9	3	3	7	-4	2	-2	-4	6	5	1305 N.M.	
10000	-9	-8	-6	-2	-7	-12	-13	8	0	0	2	6	1	0	7	3	6	
18000	-18	-12	0	-3	-9	-16	-18	14	9	0	3	6	0	-1	8	0	7	
KADENA AB																		
5000	-4	-4	0	-1	-3	-9	-11	4	3	0	1	1	-4	-4	9	10	442 N.M.	
10000	-23	-9	-2	-7	-10	-20	-22	21	6	1	7	0	0	-2	12	11	9	
18000	-40	-30	-1	-14	-21	-36	-39	30	20	0	13	17	4	1	14	13	11	
KADENA AB																		
5000	-4	-7	-3	3	-3	-10	-12	4	7	3	-3	2	-4	-9	9	10	347 N.M.	
10000	-23	-15	-3	-5	-13	-22	-24	22	14	4	5	11	2	0	11	10	9	
18000	-43	-31	-3	-11	-21	-37	-41	42	30	3	11	20	6	3	14	12	11	
KADENA AB																		
5000	6	6	5	9	4	-2	3	-4	-4	-5	-1	-3	-12	-13	10	10	827 N.M.	
10000	18	17	7	11	13	5	6	-23	-19	-7	-12	-15	-24	-26	12	11	9	
18000	31	22	10	16	19	6	6	-45	-30	-11	-21	-26	-40	-43	14	14	10	
KADENA AB																		
5000	-2	-2	-4	-2	-3	-7	-9	0	2	4	2	2	-2	-3	6	5	1911 N.M.	
10000	-5	-6	-5	-3	-5	-9	-10	4	3	5	3	4	0	0	6	5	6	
18000	-5	-1	-4	-2	-4	-9	-11	2	0	4	2	2	-2	-3	9	6	6	

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

--A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT PROBABILITY. MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS PER GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		MONTHLY AVERAGE HEADWINDS												STANDARD DEVIATION												
		WINDS																								
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
KEY WEST																										907 N.M.
5000	5	4	3	2	3	-2	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	10	
10000	6	6	3	4	4	-2	-3	-3	-4	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	11	
18000	8	5	4	0	5	-2	-3	-3	-4	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	12	
KFY WEST																										700 N.M.
5000	0	-1	1	0	0	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
10000	-8	-6	1	-2	-4	-11	-13	-13	-13	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	
18000	-21	-19	-3	-9	-12	-24	-27	-27	-27	10	13	2	6	6	0	0	0	0	0	0	0	0	0	0	12	
KFY WEST																										1001 N.M.
5000	3	0	5	4	3	-1	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	0	
10000	-3	-3	5	0	0	-5	-7	-7	-7	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	
18000	-14	-14	5	-3	-6	-15	-18	-18	-18	13	13	3	3	3	3	3	3	3	3	3	3	3	3	3	11	
KEY WEST																										1340 N.M.
5000	-3	-2	0	-2	-2	-9	-9	-9	-9	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	10	
10000	-10	-7	-2	-4	-6	-13	-15	-15	-15	5	4	1	2	2	2	2	2	2	2	2	2	2	2	2	10	
18000	-21	-16	-6	-12	-13	-24	-26	-26	-26	7	8	0	4	5	5	5	5	5	5	5	5	5	5	5	13	
KEY WEST																										1005 N.M.
5000	-5	-3	-1	-4	-4	-9	-11	-11	-11	3	2	0	3	3	1	1	1	1	1	1	1	1	1	1	9	
10000	-13	-9	-4	-7	-9	-15	-17	-17	-17	9	6	3	5	5	3	3	3	3	3	3	3	3	3	3	9	
18000	-25	-19	-9	-16	-17	-27	-29	-29	-29	13	12	7	10	10	10	10	10	10	10	10	10	10	10	10	14	
KEY WEST																										1006 N.M.
5000	-1	-1	1	0	0	-4	-4	-4	-4	1	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	7	
10000	-13	-10	0	-5	-7	-13	-15	-15	-15	12	9	0	5	5	3	3	3	3	3	3	3	3	3	3	8	
18000	-30	-25	-2	-14	-18	-29	-32	-32	-32	25	22	1	12	14	14	14	14	14	14	14	14	14	14	14	13	
KEY WEST																										972 N.M.
5000	4	3	2	2	2	-3	-4	-4	-4	-5	-4	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	10	
10000	4	4	2	3	3	-3	-5	-5	-5	-9	-7	-3	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	12	
18000	4	1	3	6	3	-5	-7	-7	-7	-19	-11	-4	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	16	
KFY WEST																										549 N.M.
5000	1	0	3	0	0	-5	-6	-6	-6	-2	0	-2	-1	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	10	
10000	-8	-7	2	-2	-3	-11	-13	-13	-13	7	6	-2	2	2	2	2	2	2	2	2	2	2	2	2	11	
18000	-22	-21	1	-9	-12	-26	-28	-28	-28	18	18	-1	7	8	8	8	8	8	8	8	8	8	8	8	15	
KEY WEST																										1122 N.M.
5000	2	1	1	1	1	-4	-6	-6	-6	-4	-2	-1	-2	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	10	
10000	1	1	1	1	2	-5	-6	-6	-6	-7	-4	-2	-3	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	11	
18000	-1	-3	1	3	0	-9	-12	-12	-12	-15	-6	-3	-9	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	16	

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.										STANDARD DEVIATION								
	DIRECT					RETURN													
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	
KEY WEST																			
5000	4	5	4	4	4	4	-3	-4	-5	-3	-4	-4	-11	-12	11	10	231 N.M.I.		
10000	3	3	3	4	3	3	-5	-4	-3	-3	-4	-4	-11	-13	12	11	7 9		
18000	2	1	3	4	2	2	-8	-7	-6	-3	-5	-5	-14	-16	16	15	0 10		
KEY WEST																			
5000	3	1	1	1	1	1	-4	-4	-3	-1	-2	-3	-9	-11	10	10	960 N.M.I.		
10000	0	0	1	2	0	0	-5	-5	-4	-2	-3	-4	-10	-12	11	11	7 9		
18000	-2	-4	1	2	0	0	-10	-13	-5	-2	-7	-7	-17	-19	16	16	9 15		
KEY WEST																			
5000	-6	-3	-1	-4	-4	-4	-11	4	2	1	3	2	-2	-4	9	8	1000 N.M.I.		
10000	-14	-9	-4	-8	-9	-9	-15	10	7	3	6	6	0	-1	9	9	6 8		
18000	-25	-19	-10	-17	-17	-17	-27	15	12	7	11	10	3	1	13	13	0 12		
KEY WEST																			
5000	0	-1	0	0	0	0	-7	0	0	0	0	0	0	-8	10	10	937 N.M.I.		
10000	-8	-6	0	-2	-4	-4	-11	4	4	0	1	1	-5	-6	11	11	0 10		
18000	-19	-17	-3	-9	-11	-11	-22	6	9	2	4	4	-4	-6	16	15	9 16		
KEY WEST																			
5000	1	0	1	0	0	0	-5	-3	-1	-1	-1	-2	-8	-10	10	10	1004 N.M.I.		
10000	-2	-1	0	0	-1	-1	-7	-3	-1	-1	-2	-2	-9	-11	11	11	0 10		
18000	-7	-8	0	-1	-4	-4	-14	-8	-1	0	-4	-3	-13	-16	16	16	9 15		
KEY WEST																			
5000	5	4	3	2	3	3	-2	-5	-4	-3	-2	-4	-10	-12	10	10	570 N.M.I.		
10000	2	2	2	2	2	2	-4	-5	-4	-2	-3	-4	-11	-13	12	11	7 9		
18000	0	-1	2	3	0	0	-10	-10	-6	-2	-6	-6	-16	-18	16	16	9 16		
KEY WEST																			
5000	5	4	3	3	3	3	-2	-7	-5	-3	-3	-5	-11	-13	10	10	1155 N.M.I.		
10000	7	7	4	5	5	5	0	-12	-11	-4	-6	-8	-15	-17	11	11	7 9		
18000	10	6	5	9	7	7	-1	-25	-15	-6	-15	-15	-26	-29	16	15	9 16		
KEY WEST																			
5000	0	0	0	0	0	0	-7	-2	-1	-1	-1	-2	-6	-9	10	10	1197 N.M.I.		
10000	-3	-2	0	0	-1	-1	-10	-2	-1	0	-1	-1	-8	-10	11	11	0 9		
18000	-9	-8	-1	-2	-5	-5	-17	-7	-1	0	-4	-3	-13	-15	16	15	9 15		
KIMPO AB																			
5000	-7	-6	-6	1	-5	-5	-10	6	6	6	-1	4	0	-2	6	6	1042 N.M.I.		
10000	-16	-13	-5	-3	-10	-16	-18	13	12	4	3	8	2	0	7	7	7 6		
18000	-36	-24	-6	-14	-19	-31	-33	28	20	5	12	15	7	5	10	9	0 8		

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT AFFILIARITIES.
*THUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION					
	DIRECT						RETURN						JAN APR JUL OCT					
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
KIMPO AB																		
TO	14	8	4	9	8	1	0	-16	-8	-4	-10	-10	-17	-19	18	11	9	10
5000	25	18	8	19	17	8	5	-28	-19	-8	-20	-19	-29	-31	13	13	10	12
10000	35	27	12	27	24	12	9	-43	-32	-13	-31	-30	-43	-47	18	16	13	16
KIMPO AB																		
TO	-14	-7	-4	-7	-9	-16	-17	14	7	4	7	8	1	0	9	11	10	9
5000	-26	-18	-6	-15	-17	-26	-28	26	18	6	14	15	6	4	12	11	11	11
10000	-45	-32	-13	-26	-29	-42	-46	43	31	13	27	27	15	12	17	15	12	14
KIMPO AB																		
TO	14	4	1	9	7	-1	-3	-14	-5	-1	-9	-9	-16	-18	10	12	11	11
5000	22	12	3	12	11	2	0	-25	-14	-4	-14	-14	-25	-28	14	14	12	13
10000	32	24	7	21	20	8	5	-42	-30	-9	-25	-3	-40	-44	19	17	16	15
KIMPO AB																		
TO	-3	-4	-7	2	-3	-8	-9	3	4	7	-2	2	-1	-2	5	6	6	6
5000	-8	-7	-5	-1	-6	-11	-12	5	6	5	0	4	0	-2	7	6	7	7
10000	-21	-12	-4	-6	-10	-18	-20	11	6	3	5	5	0	0	9	8	7	7
KIMPO AB																		
TO	-4	-3	-4	2	-3	-9	-11	2	3	4	-2	1	-5	-7	9	11	10	9
5000	-12	-10	-4	-3	-8	-16	-18	6	8	4	1	4	-3	-5	12	11	11	12
10000	-29	-19	-9	-11	-17	-28	-31	12	9	8	5	8	-1	-3	16	15	12	13
KIMPO AB																		
TO	-1	-3	-5	3	-2	-8	-10	1	3	4	-3	0	-5	-6	8	10	9	8
5000	-7	-8	-4	-1	-6	-13	-14	0	5	3	0	1	-5	-7	11	10	10	10
10000	-22	-11	-7	-5	-11	-20	-23	3	1	6	0	2	-5	-7	14	12	10	11
KIMPO AB																		
TO	16	7	3	8	8	0	0	-16	-7	-3	-8	-9	-16	-18	10	11	9	10
5000	31	20	7	17	18	8	5	-32	-21	-7	-18	-20	-30	-33	13	13	11	12
10000	48	36	13	31	31	17	14	-51	-38	-14	-33	-34	-49	-52	17	16	13	15
KODIAK																		
TO	2	0	2	0	1	-5	-6	-4	-1	-2	-2	-3	-9	-10	11	9	7	9
5000	9	3	5	3	4	-2	-4	-11	-5	-6	-5	-7	-14	-16	13	10	9	10
10000	17	8	10	12	11	0	-1	-23	-13	-13	-18	-17	-28	-31	18	16	13	16
KODIAK																		
TO	4	2	2	5	3	-1	-3	-6	-2	-2	-6	-4	-10	-11	9	7	6	8
5000	13	6	7	10	8	3	1	-14	-7	-7	-12	-10	-16	-18	10	8	7	8
10000	21	11	11	17	14	6	4	-24	-14	-12	-21	-18	-27	-29	14	12	10	12

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN												STANDARD DEVIATION					
	DIRECT				EQUIVALENT HEADWIND IN D.S. RETURN								STANDARD DEVIATION					
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
KODIAK 5000 10000 18000	2 8 16	0 3 8	2 4 9	0 2 9	0 4 10	-4 -2 1	-5 -3 -1	-3 -11 -24	0 -5 -14	-2 -5 -12	-1 -5 -16	-2 -7 -16	-7 -13 -26	-8 -15 -29	9 11 16	7 9 14	6 8 11	1962 N.M.I.
KODIAK 5000 10000 18000	3 8 15	0 3 7	3 4 9	1 2 7	1 4 9	-3 -2 0	-4 -4 -2	-5 -11 -23	-1 -6 -14	-3 -5 -12	-3 -5 -14	-9 -14 -26	-10 -15 -28	9 12 17	8 10 14	6 8 11	1966 N.M.I.	
KODIAK 5000 10000 18000	-2 0 -1	3 5 6	6 5 4	4 5 7	3 4 4	-4 -3 -7	-5 -5 -10	1 -1 -3	-3 -5 -9	-6 -5 -5	-4 -7 -10	-4 -5 -8	-10 -13 -19	-12 -15 -21	12 14 19	9 11 16	8 10 14	750 N.M.I.
KODIAK 5000 10000 18000	4 12 20	2 6 11	2 7 10	5 10 17	3 8 14	-2 2 5	-3 1 3	-5 -14 -24	-2 -7 -14	-2 -7 -12	-6 -11 -20	-4 -10 -18	-11 -16 -27	-29	9 10 14	7 8 13	7 8 11	1701 N.M.I.
KODIAK 5000 10000 18000	-6 -12 -19	-4 -6 -12	-9 -8 -14	-7 -12 -16	-7 -10 -16	-14 -18 -27	-16 -21 -30	4 10 14	3 4 9	8 7 11	6 10 13	5 7 11	-2 0 0	-3 -2	12 14 19	11 12 16	9 11 15	1168 N.M.I.
KODIAK 5000 10000 18000	0 0 0	0 3 5	2 3 5	0 3 6	0 2 4	-4 -2 -3	-5 -4 -5	0 0 -3	0 -3 -7	-2 -4 -5	-1 -4 -8	-6 -8 -14	-7 -10 -15	8 8 12	7 7 12	7 7 9	7 7 10	1997 N.M.I.
KODIAK 5000 10000 18000	2 8 17	0 3 7	2 5 10	0 2 11	1 4 11	-5 -3 0	-6 -4 -2	-4 -11 -23	0 -5 -13	-3 -6 -13	-1 -5 -18	-9 -15 -28	-10 -17 -31	11 13 18	9 11 16	7 9 13	9 11 16	1337 N.M.I.
KODIAK 5000 10000 18000	0 7 13	3 4 10	1 5 8	6 9 14	2 5 11	-3 0 1	-4 -2 0	-1 -8 -15	-3 -5 -12	-1 -5 -10	-7 -8 -16	-9 -13 -23	-11 -15 -26	10 12 16	8 9 14	7 8 12	9 10 13	1154 N.M.I.
KWJULFIN IS 5000 10000 18000	-1 -3 0	-2 -1 0	-7 -4 0	-5 -5 -4	-5 -4 -2	-9 -3 -8	-10 -9 -10	0 2 -5	1 0 -1	6 4 3	4 5 3	2 3 0	-1 -1 -6	-3 -2 -8	7 8 11	6 7 9	5 6 7	1440 N.M.I.

* HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

** S--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
+ PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET		EQUVALENT HEADWINDS DIRECTION												STANDARD DEVIATION					
		DIPY				RETURN													
		JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT
KWAJALEIN NS																			
TO		3	0	0	0	0	-3	-4	-3	0	0	0	0	-1	-4	-5	6	5	4
5000		-1	2	0	0	0	-3	-4	-4	1	-2	0	0	-1	-4	-5	5	5	4
10000		-2	1	-1	0	0	-5	-6	-6	1	-1	0	0	0	-5	-6	7	6	6
KWAJALEIN NS																			
TO		-2	-7	-7	-6	-6	-9	-10	-10	1	7	7	6	5	2	1	5	4	3
5000		-5	-2	-7	-4	-5	-8	-9	-9	5	2	6	4	4	4	1	0	5	4
10000		-4	-1	-5	-2	-3	-8	-9	-9	2	1	5	3	2	-1	-2	7	6	5
KWAJALEIN NS																			
TO		3	6	5	3	4	1	0	0	-3	-6	-5	-3	-5	-8	-8	5	5	4
5000		5	7	5	6	5	3	2	2	-5	-5	-5	-5	-6	-9	-9	4	4	4
10000		7	3	6	6	5	1	0	0	-7	-3	-6	-6	-6	-10	-11	6	5	5
KWAJALEIN NS																			
TO		0	-3	-3	-2	-3	-5	-6	-6	0	2	3	2	1	-1	-2	6	5	4
5000		-3	0	-3	-2	-2	-6	-7	-7	3	0	2	2	1	-1	-2	5	4	3
10000		-3	1	-3	-1	-2	-6	-7	-7	2	-1	2	1	0	-3	-4	7	6	5
KWAJALEIN NS																			
TO		1	7	5	1	3	0	-1	-1	-2	-7	-5	0	-4	-8	-9	5	5	4
5000		8	8	8	8	8	5	4	4	-8	-7	-7	-7	-8	-11	-11	4	4	4
10000		13	8	10	9	9	6	5	5	-13	-7	-10	-9	-10	-14	-15	6	5	5
KWAJALEIN NS																			
TO		0	2	0	1	0	-3	-4	-4	-1	-4	-1	-2	-3	-7	-8	7	6	6
5000		0	1	2	1	0	-3	-4	-4	0	-1	-2	-1	-2	-6	-7	6	5	5
10000		4	-3	3	1	1	-5	-6	-6	-5	3	-4	-1	-2	-8	-10	10	9	8
LAMOFE																			
TO		6	6	0	0	2	-1	-2	-2	-6	-6	3	0	-3	-8	-9	6	6	5
5000		15	11	2	3	7	1	0	0	-15	-11	-2	-3	-8	-14	-16	7	6	6
10000		29	20	-3	5	12	1	-1	-1	-32	-21	3	-8	-14	-27	-30	11	10	8
LAMOFE																			
TO		2	6	-2	0	1	-4	-5	-5	-1	-6	2	0	-1	-7	-8	6	7	6
5000		5	2	0	2	2	-3	-4	-4	-6	-2	0	-1	-3	-8	-10	9	8	8
10000		17	15	-2	7	8	-1	-3	-3	-24	-19	2	-8	-12	-24	-27	15	14	11
LAMOFE																			
TO		-2	-5	0	0	-2	-4	-7	-7	3	6	3	0	2	-2	-3	6	6	5
5000		-8	-8	-2	-5	-6	-11	-12	-12	8	7	3	5	5	1	0	7	7	6
10000		-30	-27	-11	-17	-21	-30	-33	-33	28	25	10	16	19	10	9	12	11	9

* HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

** DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS														STANDARD DEVIATION	
	DIRECT							RETURN								
	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT	00ASO	A75	A85		
LANDER																
5000	-2	-5	-3	1	-2	-7	-8	2	6	3	0	2	-2	-3	6	710 N.M.I.
10000	-11	-10	-1	-2	-6	-12	-14	11	10	2	3	6	0	0	8	6
18000	-35	-28	0	-13	-19	-32	-35	33	27	0	12	17	4	1	13	7
1422 N.M.I.																
LARSON AFB																
5000	5	4	2	4	3	-1	-2	-6	-4	-2	-5	-5	-10	-11	9	1422 N.M.I.
10000	17	10	6	11	10	4	2	-19	-11	-6	-12	-12	-19	-21	10	8
18000	27	18	13	20	18	9	7	-33	-22	-15	-24	-23	-34	-37	16	9
1632 N.M.I.																
LARSON AFB																
5000	11	6	5	7	7	1	0	-11	-7	-5	-8	-8	-14	-15	9	1632 N.M.I.
10000	21	17	11	14	14	7	6	-23	-13	-12	-15	-16	-23	-25	10	7
18000	32	21	20	25	23	14	12	-37	-24	-21	-28	-27	-37	-40	15	8
800 N.M.I.																
LARSON AFB																
5000	-3	-2	0	-2	-2	-7	-8	3	2	0	2	1	-2	-4	8	800 N.M.I.
10000	6	3	0	0	1	-5	-6	-8	-4	0	-1	-3	-10	-12	12	5
18000	9	5	-1	4	3	-7	-10	-18	-11	-2	-10	-10	-22	-25	19	7
1961 N.M.I.																
LARSON AFB																
5000	11	6	6	8	7	2	1	-12	-7	-6	-9	-9	-14	-16	9	1961 N.M.I.
10000	22	13	13	14	15	9	7	-23	-14	-13	-15	-16	-23	-25	9	6
18000	32	21	21	24	24	15	13	-38	-25	-22	-28	-28	-38	-40	14	7
1500 N.M.I.																
LARSON AFB																
5000	6	5	3	5	4	0	-1	-7	-5	-3	-5	-5	-11	-12	9	1500 N.M.I.
10000	18	11	7	11	11	5	3	-19	-12	-7	-12	-13	-19	-21	10	6
18000	28	18	14	21	19	10	7	-34	-23	-16	-24	-24	-35	-38	16	7
1936 N.M.I.																
LARSON AFB																
5000	-5	-5	-4	-3	-5	-8	-9	5	5	5	3	4	1	0	6	1936 N.M.I.
10000	4	2	-1	0	0	-3	-5	-6	-3	1	-1	-2	-7	-9	8	4
18000	9	6	-1	4	3	-3	-5	-17	-12	0	-8	-9	-18	-20	13	5
1091 N.M.I.																
LAPSON AFB																
5000	10	5	4	7	6	0	-1	-11	-5	-4	-8	-7	-14	-16	10	1091 N.M.I.
10000	20	11	11	15	13	7	5	-21	-11	-11	-15	-15	-22	-24	11	8
18000	29	19	21	25	23	12	10	-33	-22	-22	-28	-26	-37	-40	17	10
729 N.M.I.																
LAPSON AFB																
5000	11	5	3	7	6	0	-2	-11	-5	-3	-7	-7	-14	-16	11	729 N.M.I.
10000	18	10	10	14	12	5	4	-19	-10	-10	-15	-14	-21	-23	11	8
18000	26	17	19	23	21	10	7	-30	-19	-21	-26	-24	-36	-39	18	9

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	00ASO	A75	AB5	JAN	APR	JUL	OCT	00ASO	A75	AB5	JAN	APR	JUL	OCT
LARSON AFB																		
5000	-3	-2	0	-2	-2	-7	-8	3	2	0	3	1	-3	-4	9	8	5	7
10000	5	2	0	0	0	-6	-8	-7	-3	0	-1	-3	-10	-12	13	11	8	11
18000	7	3	-1	3	2	-9	-12	-17	-9	-1	-9	-9	-22	-25	21	19	13	18
LARSON AFB																		
5000	11	6	5	8	7	1	0	-12	-7	-5	-8	-8	-14	-16	9	9	7	8
10000	22	13	13	14	15	9	7	-23	-14	-13	-15	-16	-23	-25	9	9	7	9
18000	32	21	21	25	24	15	13	-30	-25	-22	-20	-20	-30	-41	14	14	9	14
LARSON AFB																		
5000	3	2	0	2	1	-3	-4	-4	-3	0	-3	-3	-8	-9	8	8	6	7
10000	15	9	4	8	8	2	1	-16	-10	-4	-9	-10	-16	-18	9	9	7	8
18000	24	17	10	17	16	7	5	-31	-22	-11	-21	-21	-31	-34	15	14	9	13
LARSON AFB																		
5000	11	5	5	8	7	1	0	-12	-6	-6	-9	-9	-15	-16	9	9	7	9
10000	21	12	13	15	15	8	7	-22	-13	-13	-16	-16	-23	-25	9	10	8	9
18000	31	20	22	25	24	15	12	-36	-23	-23	-20	-27	-37	-40	15	14	10	14
LARSON AFB																		
5000	-2	-1	2	0	0	-6	-7	1	1	-1	1	0	-4	-6	9	8	6	7
10000	1	0	-2	-2	-1	-8	-10	-4	-2	2	1	0	-8	-10	13	12	8	11
18000	0	-1	-5	-2	-3	-14	-17	-10	-4	2	-3	-3	-16	-19	20	19	12	18
LARSON AFB																		
5000	11	6	5	8	7	1	0	-12	-7	-5	-8	-8	-14	-16	9	9	7	8
10000	21	12	12	14	14	8	6	-23	-13	-13	-15	-16	-23	-25	9	10	7	9
18000	32	21	21	25	24	15	13	-37	-24	-22	-20	-20	-30	-40	15	14	10	14
LARSON AFB																		
5000	2	2	2	0	1	-3	-4	-3	-2	-2	0	-2	-7	-8	8	7	6	8
10000	-6	-1	-2	0	-2	-8	-10	4	0	2	-1	0	-4	-6	10	8	7	8
18000	-14	-4	-5	-7	-8	-16	-18	9	0	3	2	3	-4	-6	14	12	10	12
LARSON AFB																		
5000	12	4	3	7	6	-1	-2	-12	-5	-3	-7	-7	-15	-17	11	11	9	11
10000	16	9	9	13	11	4	2	-17	-9	-9	-14	-13	-20	-22	12	10	9	11
18000	21	14	17	19	17	6	3	-26	-17	-19	-24	-22	-34	-37	16	18	14	18
LARSON AFB																		
5000	8	4	4	7	6	0	0	-9	-6	-4	-7	-7	-13	-14	9	9	7	8
10000	20	11	9	13	12	6	4	-21	-12	-9	-14	-14	-21	-23	10	10	8	9
18000	30	19	17	24	21	12	10	-35	-23	-19	-27	-26	-36	-39	16	15	10	15

* HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS														STANDARD DEVIATION
	DIRECT							RETURN							
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	
LARSON AFB															
5000	11	6	5	8	7	1	0	-12	-6	-5	-9	-8	-14	-16	1560 N.M.I.
10000	21	12	12	15	14	8	6	-22	-13	-13	-16	-16	-23	-25	9 9 7 9
18000	31	20	21	25	23	14	12	-35	-23	-23	-28	-27	-37	-39	10 10 8 9
LARSON AFB															
5000	9	6	4	6	6	1	0	-10	-7	-4	-7	-7	-13	-14	1914 N.M.I.
10000	20	12	9	12	12	6	5	-22	-14	-9	-13	-15	-22	-23	8 8 6 8
18000	30	20	16	22	21	12	10	-36	-25	-17	-26	-26	-36	-39	9 9 7 9
LARSON AFB															
5000	12	6	6	8	7	2	0	-12	-6	-6	-9	-9	-14	-16	1987 N.M.I.
10000	21	12	13	16	15	9	7	-23	-13	-14	-16	-17	-23	-25	9 9 7 9
18000	31	20	22	24	23	15	13	-36	-24	-23	-28	-28	-37	-39	14 13 9 13
LARSON AFB															
5000	11	5	5	8	7	1	0	-12	-6	-5	-9	-8	-14	-16	1498 N.M.I.
10000	20	11	13	15	14	8	6	-21	-12	-13	-16	-16	-23	-24	9 9 7 9
18000	30	19	22	25	23	14	12	-34	-22	-23	-28	-27	-36	-39	10 10 8 9
LARSON AFB															
5000	4	3	1	2	2	-3	-5	-5	-3	-1	-3	-3	-10	-11	931 N.M.I.
10000	-2	0	0	1	0	-6	-8	0	-1	0	-3	-1	-8	-9	9 9 8 10
18000	-6	0	0	-1	-2	-12	-14	0	-4	-2	-4	-3	-13	-15	11 9 8 9
LITTLE ROCK															
5000	12	8	6	6	7	0	-2	-13	-9	-5	-6	-8	-17	-19	523 N.M.I.
10000	23	15	8	10	13	4	2	-25	-17	-9	-11	-15	-26	-28	14 13 9 11
18000	37	23	11	19	20	8	5	-44	-29	-12	-24	-25	-42	-46	14 14 10 14
LITTLE ROCK															
5000	11	7	7	8	8	1	0	-13	-8	-7	-9	-10	-16	-18	21 20 11 20
10000	22	13	11	13	14	6	4	-25	-16	-12	-15	-17	-25	-28	1307 N.M.I.
18000	34	20	15	22	21	11	8	-43	-26	-18	-28	-28	-41	-45	11 11 8 9
LITTLE ROCK															
5000	-5	-5	-4	-2	-4	-10	-11	5	5	3	2	3	-1	-3	10 9 5 8
10000	-19	-15	-4	-9	-12	-20	-22	16	15	4	8	10	3	1	12 12 9 11
18000	-37	-30	-9	-19	-22	-37	-40	33	27	8	16	19	8	5	17 17 10 17
LITTLE ROCK															
5000	13	10	6	7	8	1	0	-15	-11	-6	-7	-10	-17	-19	1005 N.M.I.
10000	27	19	10	11	15	7	5	-29	-20	-11	-12	-18	-28	-30	10 9 5 8
18000	43	27	14	24	24	12	10	-48	-32	-15	-28	-29	-45	-49	11 10 8 10
LITTLE ROCK															
5000	13	10	6	7	8	1	0	-15	-11	-6	-7	-10	-17	-19	18 16 9 15
10000	27	19	10	11	15	7	5	-29	-20	-11	-12	-18	-28	-30	10 9 5 8
18000	43	27	14	24	24	12	10	-48	-32	-15	-28	-29	-45	-49	11 10 8 10

*HEADWINDS--CORRECTED FOR A 120-KT AIRSPEED.

**--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN REFLECTS HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUVALENT HEADWINDS										STANDARD DEVIATION				
	DIRECT					RETURN					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT	00ASO	A75	A85	
LITTLE ROCK	TO														1000 N.M.I.
5000	-7	-8	-5	-1	-6	-11	-13	6	6	5	1	4	0	-2	10
10000	-10	-7	-2	-2	-6	-12	-13	8	6	2	2	4	-1	-3	9
18000	-20	-13	1	-7	-9	-20	-22	13	6	-1	4	4	-3	-5	14
LITTLE ROCK	TO														600 N.M.I.
5000	-3	-1	0	-2	-2	-9	-11	0	0	-1	1	0	-8	-10	13
10000	-4	-4	-1	-4	-4	-13	-15	0	0	0	1	0	-8	-10	14
18000	-13	-8	-4	-10	-9	-21	-24	-4	-1	0	1	-1	-13	-16	21
LITTLE ROCK	TO														800 N.M.I.
5000	-8	-4	-1	-5	-5	-13	-15	6	3	1	5	3	-3	-5	11
10000	-15	-9	-5	-10	-10	-18	-20	11	7	4	8	7	0	-2	12
18000	-25	-17	-11	-15	-18	-29	-32	13	9	7	12	9	0	-3	16
LITTLE ROCK	TO														1117 N.M.I.
5000	-5	-4	-2	-2	-4	-9	-10	4	4	2	1	2	-2	-4	9
10000	-18	-14	-5	-9	-12	-19	-21	17	13	5	9	10	3	1	11
18000	-36	-28	-11	-20	-23	-36	-39	32	25	11	17	19	9	7	17
LITTLE ROCK	TO														793 N.M.I.
5000	13	9	6	7	8	1	0	-14	-13	-6	-7	-9	-17	-19	13
10000	26	18	10	11	15	6	4	-28	-20	-10	-12	-17	-27	-30	13
18000	62	26	13	23	24	11	8	-48	-31	-14	-27	-28	-45	-49	10
LITTLE ROCK	TO														312 N.M.I.
5000	-1	0	-1	1	-1	-8	-10	0	0	1	-1	0	-8	-10	13
10000	1	1	-1	2	0	-8	-10	-6	-4	1	-3	-3	-12	-14	13
18000	0	5	5	4	3	-7	-10	-15	-15	-5	-9	-11	-23	-26	20
LITTLE ROCK	TO														786 N.M.I.
5000	11	7	5	7	7	0	-1	-12	-8	-5	-7	-8	-16	-18	13
10000	21	14	9	10	13	4	2	-24	-16	-10	-12	-16	-25	-27	13
18000	32	19	12	18	18	7	4	-42	-26	-14	-24	-25	-40	-44	20
LITTLE ROCK	TO														1327 N.M.I.
5000	-5	-5	-3	-1	-4	-9	-10	4	4	3	0	2	-2	-3	6
10000	-17	-14	-5	-9	-11	-18	-20	15	13	5	8	9	3	2	10
18000	-35	-28	-11	-18	-22	-35	-38	31	25	10	16	19	9	6	16
LITTLE ROCK	TO														712 N.M.I.
5000	4	5	1	3	3	-3	-5	-5	-5	-1	-3	-4	-10	-12	11
10000	14	11	2	5	7	0	-2	-16	-13	-2	-6	-9	-18	-20	12
18000	25	22	5	13	14	4	1	-33	-27	-5	-16	-19	-33	-37	17

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**--DENOTES ANNUAL EQUIVALENT HEADWINDS AND INDICATED PER CENT RELIABILITIES.

*MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUILIBRIUM HEADWIND IN D.S. DIRECTION										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	JAN	APR	JUL	OCT
LITTLE ROCK 5000 10000 18000	TO 12 24 36	TO 6 9 12	PITTSBURGH 7 10 12	7 10 12	0 5 9	-1 2 6	-13 -26 -45	-10 -18 -29	-6 -10 -13	-7 -12 -25	-9 -16 -26	-17 -26 -43	-19 -29 -47	657 N.M.I. 13 14 20
LITTLE ROCK 5000 10000 18000	TO -8 -14 -26	TO -4 -10 -17	REGINA -6 -11 -12	-6 -11 -20	-5 -11 -19	-13 -21 -33	7 12 16	3 8 11	1 5 8	5 9 14	3 8 11	-3 1 1	-4 0 0	1079 N.M.I. 11 11 17
LITTLE ROCK 5000 10000 18000	TO 6 10 14	TO 5 8 12	SCOTT AFB 2 4 6	2 4 6	-4 -5 -6	-14 -21 -33	-8 -16 -30	-6 -9 -18	-4 -6 -9	-3 -6 -12	-6 -9 -15	-14 -19 -31	-16 -22 -35	242 N.M.I. 15 15 22
LITTLE ROCK 5000 10000 18000	TO 9 17 26	TO 6 11 15	SELFIDGE AFB 5 9 14	5 9 14	-1 1 3	-3 0 0	-11 -22 -39	-7 -14 -24	-5 -8 -12	-6 -11 -21	-8 -14 -23	-15 -23 -38	-17 -26 -42	634 N.M.I. 13 14 20
LITTLE ROCK 5000 10000 18000	TO 12 25 40	TO 5 9 13	SHAW AFB 5 9 13	5 9 13	0 4 7	-1 2 5	-13 -26 -45	-10 -20 -34	-5 -6 -9	-5 -10 -23	-8 -15 -26	-16 -26 -43	-18 -29 -47	580 N.M.I. 13 13 19
LITTLE ROCK 5000 10000 18000	TO 13 26 41	TO 6 11 15	WESTOVER AFB 6 11 15	6 11 15	1 7 12	0 5 10	-14 -28 -47	-10 -20 -31	-6 -11 -16	-8 -13 -28	-10 -18 -29	-17 -27 -44	-19 -30 -48	1016 N.M.I. 12 13 18
LITTLE ROCK 5000 10000 18000	TO 7 13 19	TO 4 8 11	MURKIN 4 7 10	4 7 10	-2 0 3	-4 -2 -3	-9 -18 -33	-6 -11 -20	-4 -7 -11	-6 -9 -18	-7 -11 -20	-14 -21 -34	-16 -23 -37	701 N.M.I. 13 14 20
LITTLE ROCK 5000 10000 18000	TO -5 -18 -33	TO -4 -11 -23	VAKIME -2 -9 -15	-2 -9 -24	-9 -18 -23	-10 -20 -37	5 17 28	4 10 18	2 5 13	4 10 20	3 10 18	-1 4 9	-2 7 7	1456 N.M.I. 8 10 16
LITTLE ROCK 5000 10000 18000	TO -6 -14 -23	TO -3 -8 -11	YELLOWKNIFE -1 -7 -13	-1 -7 -13	-11 -16 -25	-12 -18 -27	5 11 14	2 6 9	1 6 12	5 9 12	3 7 10	-2 2 2	-4 0 0	1853 N.M.I. 9 9 13

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
*VIRUS SIG. DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION		
	DIRECT						RETURN								
	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL	OCT	MAY	AUG	JAN	APR	JUL
LOCKBOURNE	TO														
5000	11	6	8	9	9	0	-1	-13	-8	-3	-10	-10	13	13	700 N.M.I.
10000	21	13	12	14	14	5	3	-25	-16	-13	-16	-17	15	14	9 11
18000	34	18	18	25	22	10	7	-43	-26	-21	-30	-29	21	20	10 13 20
LOCKBOURNE	TO														
5000	-9	-7	-5	-5	-7	-12	-14	8	7	5	5	6	9	9	1450 N.M.I.
10000	-21	-16	-8	-11	-14	-22	-23	19	15	8	10	12	10	10	6 8 9
18000	-40	-29	-14	-23	-25	-38	-41	34	25	14	19	21	16	15	9 14
LOCKBOURNE	TO														
5000	15	11	8	9	10	2	0	-16	-12	-8	-10	-12	14	14	304 N.M.I.
10000	31	22	15	13	19	9	6	-33	-23	-15	-14	-21	16	16	9 12
18000	48	30	20	28	29	15	12	-53	-34	-21	-32	-33	23	22	11 14 22
LOCKBOURNE	TO														
5000	-12	-9	-5	-6	-8	-16	-18	11	8	5	5	6	14	13	435 N.M.I.
10000	-24	-16	-8	-10	-14	-25	-27	21	14	8	9	12	14	15	9 11
18000	-43	-27	-11	-23	-24	-41	-45	33	20	10	17	18	21	21	10 14 20
LOCKBOURNE	TO														
5000	-8	-7	-3	-2	-5	-11	-12	7	7	3	2	4	9	8	1473 N.M.I.
10000	-14	-10	-3	-4	-8	-14	-16	11	8	3	3	5	9	9	6 8
18000	-28	-18	0	-12	-14	-26	-28	20	12	0	8	8	13	12	7 12
LOCKBOURNE	TO														
5000	-13	-8	-6	-8	-9	-18	-20	11	7	6	7	7	14	13	553 N.M.I.
10000	-24	-16	-13	-14	-17	-27	-29	21	14	12	12	14	14	15	10 12
18000	-41	-27	-20	-27	-28	-42	-46	32	21	18	22	22	21	21	11 14 20
LOCKBOURNE	TO														
5000	-12	-7	-6	-9	-9	-16	-18	11	6	5	8	7	12	12	943 N.M.I.
10000	-23	-14	-13	-15	-17	-25	-27	21	12	12	14	14	12	13	9 11
18000	-38	-25	-21	-27	-27	-40	-43	31	20	19	23	22	18	18	10 11 18
LOCKBOURNE	TO														
5000	-8	-7	-5	-5	-7	-12	-13	7	6	5	4	5	9	8	1524 N.M.I.
10000	-20	-14	-9	-12	-14	-21	-23	19	13	9	11	12	10	10	6 7
18000	-39	-27	-17	-24	-26	-37	-41	33	24	16	21	22	16	15	9 14
LOCKBOURNE	TO														
5000	15	11	7	9	10	1	0	-16	-11	-7	-10	-11	15	14	282 N.M.I.
10000	31	21	15	13	19	9	6	-32	-23	-15	-14	-21	16	16	9 12
18000	48	29	20	23	29	15	12	-52	-34	-21	-32	-33	23	23	11 15 22

*HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

***DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS														STANDARD DEVIATION			
	DIRECT				RETURN													
	JAN	APR	JUL	OCT	00ASO	075	AB5	JAN	APR	JUL	OCT	00ASO	075	AB5	JAN	APR	JUL	OCT
LOCKBOURNE																		
5000	-9	-6	-3	-3	-5	-13	-15											676 N.M.I.
10000	-18	-12	-5	-6	-10	-19	-22											12 12 8 10
18000	-34	-20	-3	-15	-16	-32	-36											13 13 9 12
																		19 18 10 10
LOCKBOURNE																		
5000	9	4	4	7	4	-2	-4											274 N.M.I.
10000	17	11	9	10	11	1	0											15 14 10 12
18000	24	11	12	13	15	2	-1											16 16 12 15
																		23 23 14 23
LOCKBOURNE																		
5000	-8	-6	-4	-4	-6	-11	-12											1751 N.M.I.
10000	-19	-14	-5	-11	-13	-20	-22											8 8 6 7
18000	-37	-27	-10	-22	-24	-36	-39											10 9 7 9
																		15 14 8 13
LOCKBOURNE																		
5000	-1	0	0	0	0	-7	-9											694 N.M.I.
10000	0	0	0	0	0	-8	-10											11 11 8 10
18000	-5	0	0	-2	-1	-12	-15											13 13 8 12
																		18 18 10 17
LOCKBOURNE																		
5000	-12	-7	-5	-9	-9	-16	-18											1119 N.M.I.
10000	-22	-13	-13	-14	-16	-24	-26											11 11 9 11
18000	-36	-24	-20	-27	-26	-38	-41											11 12 9 11
																		17 16 11 16
LOCKBOURNE																		
5000	-15	-10	-5	-9	-10	-19	-21											335 N.M.I.
10000	-25	-20	-12	-16	-19	-29	-32											15 14 9 12
18000	-48	-32	-18	-29	-30	-47	-51											15 15 11 14
																		22 22 13 21
LOCKBOURNE																		
5000	-1	-2	0	0	-1	-3	-12											177 N.M.I.
10000	-4	-2	-1	0	-2	-12	-14											15 14 10 12
18000	-10	-9	-2	-3	-6	-20	-24											16 16 12 15
																		24 24 14 23
LOCKBOURNE																		
5000	3	3	2	1	2	-5	-7											360 N.M.I.
10000	5	4	2	1	2	-6	-8											13 13 9 12
18000	0	0	3	0	0	-10	-13											15 15 10 14
																		21 21 12 20
LOCKBOURNE																		
5000	14	9	8	9	9	1	0											495 N.M.I.
10000	26	19	14	14	18	3	5											14 13 9 11
18000	44	26	20	23	28	14	11											16 16 11 14
																		22 22 13 21

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
*MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS										STANDARD DEVIATION							
	DIRECT					RETURN												
	JAN	APR	JUL	OCT	00-450	A75	A95	JAN	APR	JUL	OCT	00-450	A75	A95	JAN	APR	JUL	OCT
LOCKBOURNE																		
5000	-2	-3	-1	0	-2	-10	-13	0	1	0	-1	0	-9	-11	15	14	10	12
10000	-6	-4	-3	-1	-4	-14	-16	-1	0	1	-1	0	-10	-13	16	16	12	15
18000	-15	-11	-5	-7	-9	-24	-27	-6	0	0	-4	-2	-16	-20	23	23	14	22
LOCKBOURNE																		
5000	-11	-7	-5	-8	-8	-14	-15	10	6	5	7	6	1	0	9	9	7	8
10000	-22	-13	-11	-15	-15	-22	-24	21	12	11	14	14	7	6	18	18	7	9
18000	-37	-24	-21	-28	-27	-37	-40	32	21	20	25	23	14	12	15	14	10	14
LOCKBOURNE																		
5000	-7	-4	-4	-8	-6	-12	-14	6	3	3	7	4	-1	-2	9	9	8	9
10000	-16	-9	-11	-13	-13	-19	-20	14	8	10	11	10	4	3	9	9	8	9
18000	-27	-17	-17	-20	-20	-29	-31	20	13	14	16	15	7	5	13	13	9	13
LOCKING AFB																		
5000	-9	-6	-6	-7	-7	-16	-18	6	4	6	6	5	-2	-4	14	14	10	12
10000	-20	-13	-10	-13	-14	-24	-27	13	9	8	10	9	0	-2	17	16	11	14
18000	-37	-21	-16	-26	-24	-39	-43	23	11	11	18	15	1	-1	23	22	14	21
LOCKING AFB																		
5000	-13	-8	-7	-8	-9	-16	-18	11	7	7	8	8	1	0	11	11	8	9
10000	-25	-16	-12	-14	-17	-25	-27	21	13	11	12	13	6	4	12	12	9	11
18000	-43	-26	-18	-28	-28	-41	-45	34	19	15	22	21	10	8	18	17	11	17
LOCKING AFB																		
5000	-14	-7	-9	-11	-11	-18	-20	13	6	9	11	9	2	0	12	12	9	11
10000	-24	-14	-16	-19	-19	-27	-29	22	12	15	17	16	8	6	13	13	10	12
18000	-39	-25	-25	-30	-30	-42	-45	35	21	24	26	26	14	12	19	18	12	18
LOCKING AFB																		
5000	-12	-6	-9	-11	-10	-17	-19	11	5	9	10	8	1	0	11	11	9	10
10000	-22	-12	-16	-18	-17	-25	-27	20	11	15	16	15	8	6	11	11	9	11
18000	-35	-22	-26	-28	-28	-38	-41	31	19	24	25	24	14	12	16	15	11	15
LOCKING AFB																		
5000	-11	-7	-7	-8	-9	-17	-19	8	5	7	7	6	-1	-3	14	14	10	12
10000	-22	-14	-11	-15	-16	-26	-28	17	11	10	12	12	2	0	16	16	11	14
18000	-40	-23	-18	-29	-27	-42	-46	29	15	14	21	19	5	2	22	22	14	21
LOCKING AFB																		
5000	-11	-8	-6	-6	-8	-14	-16	10	6	5	6	6	0	0	10	10	7	9
10000	-22	-15	-9	-11	-14	-22	-24	18	12	8	9	11	4	2	11	11	8	10
18000	-40	-24	-12	-24	-24	-37	-41	29	16	9	18	16	6	4	16	16	9	15

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

00-A—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUILY VALENT										RETURN				STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
LOPING AFB	TN										NIAGARA FALLS				522 M.M.			
5000	-14	-8	-10	-11	-11	-20	-22	12	7	9	10	9	1	-1	14	14	10	12
10000	-25	-15	-14	-19	-18	-29	-31	22	13	14	17	16	6	4	16	16	11	14
18000	-43	-26	-24	-32	-31	-45	-49	36	20	21	27	25	11	8	23	22	14	21
LOPING AFB	TO										PATRICK AFB				1271 M.M.			
5000	-8	-6	-4	-4	-4	-12	-14	6	4	4	5	4	-1	-3	10	10	7	9
10000	-15	-12	-6	-8	-13	-18	-20	9	9	5	6	7	3	-1	12	12	6	11
18000	-31	-19	-10	-20	-19	-31	-34	16	9	7	13	10	1	0	17	16	9	15
LOPING AFB	TO										PITTSBURGH				699 M.M.			
5000	-13	-8	-8	-9	-13	-19	-20	10	4	4	9	8	0	-1	14	13	10	11
10000	-25	-15	-13	-16	-17	-27	-31	21	12	12	14	14	5	3	15	15	11	13
18000	-42	-25	-21	-30	-29	-43	-47	33	18	18	24	22	9	6	22	21	13	21
LOPING AFB	TO										PISCATAWAY				1457 M.M.			
5000	-12	-6	-9	-11	-10	-17	-19	11	5	8	10	6	1	0	10	10	8	10
10000	-21	-11	-14	-17	-17	-24	-26	19	10	15	16	15	7	4	11	11	9	10
18000	-33	-20	-25	-27	-27	-34	-39	29	17	24	24	23	13	11	15	14	11	15
LOPING AFB	TO										SCOTT AFB				1091 M.M.			
5000	-14	-8	-8	-10	-10	-18	-19	12	7	8	9	8	1	0	12	12	9	10
10000	-26	-16	-13	-17	-18	-27	-29	23	14	12	15	15	7	5	13	13	9	12
18000	-43	-26	-21	-30	-29	-42	-46	36	20	19	24	23	12	10	19	18	11	18
LOPING AFB	TO										SELFRIDGE AFB				687 M.M.			
5000	-14	-8	-9	-11	-11	-19	-21	13	7	9	10	9	1	0	14	13	10	11
10000	-26	-15	-15	-19	-19	-29	-31	23	13	14	17	16	7	5	15	15	11	13
18000	-43	-26	-24	-32	-31	-45	-49	37	21	21	27	25	13	10	21	21	13	20
LOPING AFB	TN										SWAN AFB				965 M.M.			
5000	-9	-4	-5	-4	-7	-14	-15	7	5	5	5	5	-1	-3	12	12	8	10
10000	-20	-14	-9	-11	-13	-22	-25	14	10	7	9	9	1	0	14	14	9	12
18000	-38	-22	-14	-25	-24	-36	-41	24	12	10	17	14	3	1	19	19	11	18
LOPING AFB	TO										THULF				1775 M.M.			
5000	-1	0	0	0	0	-5	-6	0	-1	-1	-2	-1	-7	-8	0	0	7	8
10000	0	0	0	0	0	-6	-8	-3	-1	-2	-2	-3	-9	-10	10	10	6	9
18000	3	0	0	0	0	-10	-10	-9	-4	-2	-5	-5	-14	-16	13	13	11	13
LOPING AFB	TN										WESTOVER AFB				347 M.M.			
5000	-8	-4	-7	-7	-8	-14	-15	5	4	6	6	5	-3	-5	15	15	11	12
10000	-19	-11	-10	-14	-14	-24	-27	12	6	6	10	9	0	-3	17	17	12	15
18000	-36	-20	-17	-27	-25	-43	-44	23	11	11	18	15	1	-2	24	23	15	22

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

00A—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED DEPARTURE ON FACILITIES.
MINUS SIGN DENOTES HEADWINDS.

Sheet 202

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN DEGREES FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET		WINDY												HEADWIND 10												STANDARD DEVIATION			
		JAN	APR	JUL	OCT	00050	A75	A95	JAN	APR	JUL	OCT	00050	A75	A95	JAN	APR	JUL	OCT										
LUNING AFB																													
5000	-15	-8	-10	-11	-11	-20	-22	13	7	10	11	10	2	0	14	13	10	11	004 M.M.										
10000	-20	-15	-10	-20	-20	-20	-32	24	13	15	10	17	0	5	15	15	11	13											
10000	-02	-20	-25	-32	-31	-05	-00	37	22	23	20	27	14	10	21	21	14	20											
LUNING AFB																													
5000	-0	-4	-0	-10	-0	-10	-15	7	3	5	9	0	0	-1	9	9	0	9	1007 M.M.										
10000	-10	-0	-12	-11	-12	-10	-20	12	7	12	12	10	4	3	9	9	0	2											
10000	-22	-15	-19	-21	-20	-20	-30	10	12	10	10	16	0	0	12	12	10	12											
LUNING AFB																													
5000	9	7	6	4	0	1	0	-10	-0	-0	-0	-0	-13	-14	9	0	0	7	1043 M.M.										
10000	21	10	9	11	13	7	5	-24	-17	-10	-12	-16	-23	-25	10	9	0	0											
10000	37	26	15	21	23	14	11	-03	-30	-16	-25	-27	-40	-43	15	14	0	13											
LUNING AFB																													
5000	5	5	4	2	3	-1	-2	-0	-0	-4	-3	-3	-11	-12	10	9	0	0	1111 M.M.										
10000	10	15	5	6	11	3	2	-20	-16	-4	-9	-13	-21	-23	11	10	0	0											
10000	34	20	9	17	20	0	7	-30	-30	-9	-19	-23	-37	-40	17	15	9	15											
LUNING AFB																													
5000	-0	-7	-0	-3	-0	-10	-11	0	7	7	3	0	1	0	0	7	4	7	1101 M.M.										
10000	2	1	-0	-1	-1	-0	-0	-4	-2	4	1	0	-0	-7	9	0	0	0											
10000	0	0	-0	1	1	-0	-0	-15	-12	5	-2	-5	-10	-10	14	12	7	11											
LUNING AFB																													
5000	3	0	5	3	3	-1	-3	-4	-3	-3	-4	-3	-11	-12	9	9	7	0	1117 M.M.										
10000	10	7	0	7	0	1	0	-12	-0	-0	-0	-9	-16	-10	11	10	0	0											
10000	19	10	15	13	15	5	3	-27	-21	-10	-10	-20	-31	-34	10	16	10	15											
LUNING AFB																													
5000	3	3	4	2	3	-2	-3	-3	-3	-0	-2	-4	-9	-10	0	0	0	0	1016 M.M.										
10000	2	2	0	3	3	-2	-4	-5	-3	-0	-4	-5	-11	-13	10	9	0	0											
10000	0	0	12	4	7	-3	-0	-15	-12	-14	-10	-13	-23	-26	10	16	11	15											
LUNING AFB																													
5000	1	0	2	2	1	-3	-4	-1	0	-1	-2	-2	-0	-0	9	0	5	7	211 M.M.										
10000	-10	-0	0	-3	-5	-14	-10	0	7	9	3	3	-4	-5	14	12	9	11											
10000	-23	-17	-1	-10	-12	-20	-30	15	11	5	7	0	-5	-0	23	20	12	10											
LUNING AFB																													
5000	9	7	0	5	0	1	0	-10	-0	-0	-0	-0	-13	-14	9	0	0	7	1740 M.M.										
10000	21	15	9	11	13	7	5	-23	-17	-10	-12	-15	-23	-24	10	9	7	9											
10000	36	26	15	20	22	13	11	-02	-20	-14	-24	-26	-39	-42	15	14	0	14											

OVERLAYS--COMPUTE FOR A 120-DEGREE SPREAD.
 000--0000'S ANNUAL EQUIVALENT HEADINGS FOR INDICATED PER CENT RELIABILITIES.
 NUMERICAL SIGN INDICATES HEADINGS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. DIRECT RETURN												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
NEW ORLEANS																		
LUKE AFB		TO																
4000	4	3	0	0	1	-3	-5	-4	-3	0	-1	-3	-8	-10	9	9	1154 N.M.I.	
10000	16	12	0	6	6	0	0	-17	-13	0	-6	-9	-17	-19	10	9	6	
18000	31	26	1	14	16	4	1	-35	-29	-2	-16	-20	-34	-37	16	14	8 13	
NIAGARA FALLS																		
LUKE AFB		TO																
4000	8	6	6	5	6	1	0	-9	-7	-6	-6	-7	-13	-14	9	9	1662 N.M.I.	
10000	18	13	10	11	12	6	5	-20	-14	-10	-12	-14	-21	-23	10	10	7	
18000	32	22	16	19	21	12	9	-38	-27	-17	-23	-25	-37	-40	16	15	9 14	
CINARAD AFB																		
LUKE AFB		TO																
4000	-2	-3	-1	3	-1	-1	-8	2	3	2	-3	0	-4	-6	9	8	338 N.M.I.	
10000	-11	-10	-3	-5	-7	-1	-17	10	10	3	5	6	-1	-2	14	12	6 7	
18000	-29	-24	-8	-13	-17	-31	-34	26	21	7	11	14	2	0	22	19	12 17	
PATRICK AFB																		
LUKE AFB		TO																
4000	4	4	1	1	2	-2	-3	-5	-4	-1	-2	-3	-8	-9	8	8	1659 N.M.I.	
10000	14	12	1	6	8	1	0	-17	-13	-1	-6	-9	-17	-18	9	8	5 7	
18000	31	26	2	14	17	5	3	-35	-29	-2	-16	-21	-34	-37	13	12	7 12	
PITTSBURGH																		
LUKE AFB		TO																
4000	8	7	6	5	6	1	0	-9	-3	-6	-6	-8	-13	-14	9	9	1507 N.M.I.	
10000	20	15	9	11	13	6	5	-22	-15	-9	-11	-14	-22	-24	10	10	6 7	
18000	35	25	15	20	22	12	10	-40	-29	-16	-24	-26	-38	-42	16	15	9 14	
REGINA																		
LUKE AFB		TO																
4000	4	3	3	2	3	-1	-3	-4	-3	-3	-2	-4	-8	-10	8	8	1071 N.M.I.	
10000	0	0	4	1	1	-5	-6	-2	-1	-4	-2	-3	-9	-10	10	9	6 7	
18000	-2	1	9	0	2	-8	-11	-8	-8	-12	-6	-9	-19	-22	17	16	11 15	
SCOTT AFB																		
LUKE AFB		TO																
4000	6	6	5	3	4	0	-2	-7	-6	-5	-4	-6	-12	-13	9	9	1124 N.M.I.	
10000	17	13	7	9	11	4	2	-19	-14	-7	-10	-13	-20	-22	11	10	8 10	
18000	32	25	12	17	19	9	7	-37	-28	-13	-20	-23	-36	-40	17	16	9 15	
SELFIDGE AFB																		
LUKE AFB		TO																
4000	7	6	6	5	6	3	0	-9	-7	-6	-6	-7	-13	-14	9	9	1489 N.M.I.	
10000	17	12	9	10	11	5	3	-19	-14	-7	-12	-14	-21	-22	10	10	6 8	
18000	30	22	16	18	20	11	9	-37	-26	-17	-22	-25	-36	-39	16	15	9 14	
SHAW AFB																		
LUKE AFB		TO																
4000	7	6	4	3	4	0	-1	-8	-7	-4	-3	-6	-11	-12	9	8	1505 N.M.I.	
10000	20	16	5	7	11	4	3	-22	-17	-5	-9	-13	-21	-23	10	9	6 7	
18000	36	29	3	18	21	10	7	-40	-31	-9	-20	-24	-38	-41	15	14	8 13	

* HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
+ OR - SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION					
	DIRECT				RETURN													
	JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT	00A50	A75	A85	JAN	APR	JUL	OCT
LUKE AFB																		
5000	2	7	6	6	6	2	0	-10	-8	-6	-7	-8	-13	-14	8	8	6	7
10000	21	15	10	12	14	7	6	-23	-16	-11	-13	-16	-23	-24	10	9	7	9
18000	35	24	17	21	22	14	12	-41	-29	-18	-25	-27	-39	-42	15	14	8	13
LUKE AFB																		
5000	6	5	6	5	5	0	-1	-7	-6	-6	-6	-7	-12	-13	9	9	6	8
10000	15	11	9	10	11	4	3	-18	-12	-10	-11	-13	-20	-21	10	10	8	9
18000	27	20	16	17	19	10	8	-34	-25	-17	-22	-24	-35	-37	16	15	9	14
LUKE AFB																		
5000	2	2	0	2	1	-3	-4	-2	-2	0	-2	-2	-7	-8	8	7	5	7
10000	-9	-4	0	-2	-4	-11	-13	7	3	0	1	2	-4	-6	12	11	8	10
18000	-19	-12	-3	-11	-11	-23	-27	11	6	0	6	4	-6	-9	20	18	12	17
LUKE AFB																		
5000	3	2	1	0	1	-3	-4	-3	-2	-1	-1	-2	-7	-8	7	7	6	7
10000	-6	-2	0	-2	-3	-8	-9	4	1	0	1	1	-3	-4	9	7	6	7
18000	-12	-5	0	-7	-6	-15	-17	4	0	-2	1	0	-8	-10	14	13	9	12
MANDALAY																		
5000	0	-2	-5	-4	-3	-8	-9	0	2	3	4	2	-1	-3	6	6	6	6
10000	2	1	0	-2	0	-4	-5	-2	-1	0	2	0	-5	-6	7	6	7	6
18000	3	3	-1	-2	0	-5	-6	-4	-3	1	2	-1	-7	-8	9	8	7	7
MANDALAY																		
5000	-7	-6	0	0	-4	-9	-10	7	7	0	0	3	-1	-2	6	6	7	6
10000	-16	-12	-3	-3	-9	-16	-17	16	12	3	4	8	2	0	7	7	8	7
18000	-33	-21	3	-8	-14	-28	-31	31	20	-3	7	12	0	-1	12	11	8	9
MANDALAY																		
5000	-1	-1	-4	-3	-3	-7	-8	1	2	2	4	2	-2	-3	6	6	7	6
10000	2	1	1	-2	0	-4	-5	-2	-1	-2	2	-1	-6	-7	7	6	8	6
18000	3	3	-1	-3	0	-5	-7	-5	-4	1	2	-1	-7	-9	9	8	8	7
MANDALAY																		
5000	5	4	6	-1	3	-1	-2	-5	-4	-6	2	-4	-9	-10	6	7	7	6
10000	7	7	2	0	4	-1	-2	-10	-9	-3	0	-6	-12	-13	8	7	8	7
18000	19	13	5	8	10	3	2	-28	-18	-6	-11	-15	-25	-27	11	10	8	9
MANDALAY																		
5000	7	6	5	-1	4	0	-2	-6	-6	-5	1	-4	-9	-10	6	6	7	5
10000	16	13	5	4	9	3	2	-19	-14	-5	-5	-11	-18	-19	7	7	7	5
18000	33	23	5	13	17	8	6	-39	-26	-6	-15	-21	-33	-36	10	9	7	8

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

00A—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.												STANDARD DEVIATION			
	DIRECT						RETURN									
	JAN	APR	JUL	OCT	00050	075	005	075	100	075	005	075	JAN	APR	JUL	OCT
MANDALAY																
5000	0	0	0	-4	-1	-6	-7	-7	1	0	-1	4	0	-3	-5	
10000	5	4	4	0	3	-1	-2		-5	-4	-5	0	-4	-9	-10	
18000	8	7	-2	-3	1	-5	-6		-10	-7	2	3	-2	-10	-12	
MANDALAY																
5000	5	7	5	-2	3	-1	-3		-5	-7	-5	2	-4	-9	-11	
10000	15	13	5	3	9	2	1		-17	-13	-5	-3	-10	-17	-18	
18000	33	22	2	11	16	6	3		-37	-25	-2	-12	-15	-31	-34	
MANDALAY																
5000	0	0	-2	-4	-2	-6	-7		0	0	1	7	1	-2	-3	
10000	3	2	2	-1	1	-2	-4		-3	-2	-2	2	-2	-6	-7	
18000	2	2	-2	-3	-1	-5	-7		-3	-3	2	3	0	-5	-7	
MANDALAY																
5000	2	7	3	-1	2	-3	-4		-2	-7	-3	3	-3	-8	-9	
10000	16	13	5	3	9	3	1		-16	-13	-6	-3	-10	-16	-18	
18000	33	22	-1	9	14	3	0		-34	-23	1	-9	-16	-29	-32	
MANDALAY																
5000	-5	-7	-2	0	-4	-8	-9		5	7	2	0	3	0	-1	
10000	-14	-11	-2	-3	-8	-13	-15		14	11	2	3	7	1	0	
18000	-30	-24	2	-9	-16	-30	-33		35	22	-2	5	14	2	0	
MCGUIRE AFB																
5000	-14	-10	-6	-7	-9	-17	-19		13	10	6	7	8	1	0	
10000	-29	-21	-11	-12	-18	-28	-31		26	19	10	11	15	7	4	
18000	-48	-32	-15	-23	-29	-45	-49		43	27	14	24	25	12	9	
MCGUIRE AFB																
5000	-8	-8	-3	-2	-5	-11	-12		7	7	3	2	4	0	-1	
10000	-16	-13	-4	-5	-9	-16	-18		13	11	1	4	7	1	0	
18000	-33	-22	-2	-15	-18	-30	-33		25	16	1	12	12	3	1	
MCGUIRE AFB																
5000	-14	-9	-8	-9	-10	-18	-20		13	9	7	9	9	1	0	
10000	-27	-18	-15	-16	-19	-28	-30		25	16	15	14	17	8	6	
18000	-45	-30	-23	-29	-31	-45	-48		38	26	21	25	26	14	12	
MCGUIRE AFB																
5000	-13	-9	-7	-10	-10	-17	-19		12	7	7	9	8	1	0	
10000	-25	-16	-15	-16	-19	-26	-29		23	14	15	15	16	8	7	
18000	-40	-27	-23	-29	-29	-41	-44		34	23	22	24	25	15	12	

* HEADWINDS - COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT	00ASO	A75	A85
NELLIS AFB														
5000	-10	-8	-5	-6	-8	-13	-14	8	7	5	5	6	1	0
10000	-23	-16	-11	-12	-15	-22	-24	21	14	10	11	13	7	5
18000	-41	-29	-18	-26	-27	-39	-42	35	25	13	22	23	15	13
NEW ORLEANS														
5000	-12	-9	-5	-5	-8	-15	-17	11	8	5	4	6	0	-1
10000	-23	-18	-7	-8	-14	-23	-25	20	15	7	7	11	3	2
18000	-42	-28	-8	-22	-24	-39	-43	34	21	7	18	18	6	4
NIAGARA FALLS														
5000	-13	-9	-7	-7	-9	-18	-20	10	8	6	6	7	-1	-3
10000	-25	-17	-12	-11	-16	-27	-30	19	13	11	9	12	2	0
18000	-40	-23	-18	-23	-27	-43	-47	25	22	16	15	19	5	1
PATRICK AFB														
5000	-7	-5	-3	-3	-5	-12	-13	6	4	3	2	3	-3	-4
10000	-13	-11	-4	-5	-8	-17	-19	7	8	4	4	5	-2	-3
18000	-26	-16	-6	-15	-15	-27	-31	11	6	4	10	7	-2	-5
PITTSBURGH														
5000	-16	-12	-8	-10	-12	-21	-23	15	11	8	9	10	1	0
10000	-33	-23	-16	-14	-21	-33	-36	31	22	15	13	19	8	6
18000	-52	-35	-22	-31	-33	-51	-55	47	31	21	27	29	15	12
REGINA														
5000	-12	-7	-7	-9	-9	-16	-18	11	6	6	9	7	1	0
10000	-24	-15	-15	-16	-18	-25	-27	22	13	14	14	15	8	6
18000	-38	-25	-23	-27	-28	-38	-41	32	21	21	23	23	14	12
SCOTT AFB														
5000	-16	-11	-7	-9	-11	-19	-21	15	10	7	9	9	2	0
10000	-31	-22	-14	-14	-20	-30	-33	29	20	13	13	18	8	6
18000	-51	-33	-19	-31	-32	-48	-53	46	29	19	27	28	15	12
SELFIDGE AFB														
5000	-15	-11	-8	-9	-11	-20	-22	14	10	3	8	9	1	0
10000	-30	-20	-15	-14	-20	-30	-32	27	18	14	12	17	7	4
18000	-48	-32	-21	-29	-31	-47	-52	40	23	20	23	26	13	9
SHA AFB														
5000	-10	-7	-4	-5	-7	-15	-17	8	5	4	4	5	-2	-4
10000	-20	-15	-7	-8	-13	-23	-25	14	13	7	7	9	0	-1
18000	-35	-24	-10	-23	-23	-34	-43	26	14	8	17	15	2	0

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.

*PLUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FFET	EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION		
	DIRECT						REVERSE								
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC			
WCCUTIE AFB	TO	WESTOVER AFB													
5000	7	5	5	6	5	-3	-5	-10	-7	-6	-7	-8	-17	-20	160 N.M.I.
10000	14	12	8	10	10	0	-2	-21	-16	-10	-13	-15	-26	-29	15 11 13
18000	24	12	11	18	15	1	-1	-40	-23	-15	-26	-25	-42	-46	18 18 12 15
WCCUTIE AFB	TO	Wurtsmith													
5000	-14	-9	-7	-8	-10	-12	-21	12	8	7	7	8	0	-2	471 N.M.I.
10000	-26	-18	-14	-14	-18	-28	-31	22	15	13	12	15	5	3	14 14 10 12
18000	-43	-30	-21	-27	-24	-45	-49	32	24	19	19	22	9	6	16 16 11 14
WCCUTIE AFB	TO	YELLOWKNIFE													
5000	-8	-4	-5	-9	-7	-13	-14	6	3	4	7	4	0	-2	1950 N.M.I.
10000	-14	-10	-12	-13	-13	-19	-20	14	8	11	14	11	5	3	9 8 7 9
18000	-27	-16	-19	-21	-21	-30	-32	19	14	16	16	16	8	6	9 9 7 8
WCCUTIE AFB	TO	NEW DELHI													
5000	-1	0	-3	2	-1	-4	-5	1	0	2	-2	0	-3	-4	1939 N.M.I.
10000	-4	-2	-3	0	-3	-6	-7	4	2	2	1	2	-1	-2	4 5 5 5
18000	-12	-7	2	0	-4	-11	-12	7	6	-2	0	2	-3	-4	5 5 6 5
WCCUTIE AFB	TO	SAIGON													
5000	-2	2	13	1	2	-3	-4	3	-2	-13	-2	-3	-10	-12	645 N.M.I.
10000	0	1	6	5	2	-2	-3	0	0	-4	-4	-3	-8	-9	6 6 5 8
18000	-2	-3	-3	-6	-4	-10	-11	2	3	3	6	3	-1	-3	7 6 8 7
WCCUTIE AFB	TO	SINGAPORE													
5000	0	2	5	1	2	-2	-3	0	-1	-4	-1	-2	-7	-8	341 N.M.I.
10000	2	2	6	4	3	-1	-3	-1	-2	-5	-4	-4	-9	-10	7 6 6 8
18000	-7	-3	-6	-6	-5	-12	-13	7	3	4	6	5	0	-1	8 8 9 7
WCCUTIE AFB	TO	TAIPEI													
5000	0	3	10	-2	2	-2	-3	0	-3	-13	1	-3	-8	-9	1843 N.M.I.
10000	4	5	6	3	4	0	0	-4	-4	-5	-2	-4	-9	-10	5 4 5 5
18000	5	3	-1	0	1	-3	-4	-8	-4	1	0	-3	-8	-9	6 5 7 6
WCCUTIE AFB	TO	Noumea													
5000	0	3	8	5	3	-2	-3	-1	-4	-3	-6	-5	-11	-13	1478 N.M.I.
10000	5	3	12	11	9	2	0	-5	-8	-14	-12	-10	-17	-19	8 8 9 8
18000	14	15	22	21	17	9	7	-15	-18	-28	-26	-22	-31	-33	9 9 9 10
WCCUTIE AFB	TO	Peshawar													
5000	-10	-13	-14	-13	-13	-19	-20	10	13	14	12	12	6	5	1454 N.M.I.
10000	-15	-18	-20	-21	-19	-26	-28	15	17	19	19	17	10	8	7 8 9 9
18000	-21	-27	-28	-34	-29	-39	-42	19	24	24	35	24	15	12	10 10 12 11

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DEFINES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. PERCENT												STANDARD DEVIATION					
	DIRECT				RETURN													
	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT
MELBOURNE																		
5000	0	1	2	1	1	-3	-4	0	-1	-2	-2	-2	-6	-7	6	6	7	7
10000	0	1	2	2	0	-4	-5	0	-1	-4	-4	-2	-8	-9	7	7	8	8
18000	2	0	-1	0	0	-6	-8	-4	-3	-5	-5	-5	-11	-13	8	9	11	10
MELBOURNE																		
5000	9	10	9	10	9	2	0	-9	-11	-9	-11	-10	-17	-19	8	10	11	11
10000	14	15	11	14	13	5	3	-15	-16	-12	-16	-15	-23	-25	11	12	12	12
18000	23	27	22	26	24	14	12	-25	-29	-24	-29	-27	-37	-39	13	14	14	15
MEMPHIS																		
5000	-7	-8	-4	-1	-5	-11	-13	6	7	4	1	4	-1	-2	9	9	6	8
10000	-11	-9	-2	-3	-6	-13	-14	9	7	2	2	4	-1	-2	9	9	7	9
18000	-23	-15	1	-8	-10	-22	-25	16	10	-2	6	5	-2	-4	14	13	7	12
MEMPHIS																		
5000	-5	-3	0	-3	-3	-11	-13	2	1	0	2	1	-6	-8	13	13	9	11
10000	-9	-6	-3	-6	-6	-15	-18	3	3	2	3	2	-6	-8	14	14	11	13
18000	-19	-12	-7	-14	-13	-25	-29	1	3	4	5	3	-8	-11	21	20	12	19
MEMPHIS																		
5000	-9	-5	-2	-6	-6	-14	-15	7	4	2	5	4	-3	-4	12	12	9	11
10000	-16	-10	-7	-11	-11	-19	-21	12	8	5	9	8	0	-1	12	12	9	12
18000	-28	-19	-12	-21	-20	-31	-35	16	12	9	14	12	2	0	18	17	11	17
MEMPHIS																		
5000	-6	-5	-3	-2	-4	-10	-11	5	4	3	2	3	-1	-3	9	9	6	8
10000	-19	-14	-6	-10	-12	-20	-22	17	13	6	9	10	4	2	11	10	8	9
18000	-37	-29	-12	-20	-23	-36	-40	33	26	11	18	20	10	7	17	15	9	15
MEMPHIS																		
5000	13	9	6	7	9	1	0	-14	-10	-6	-7	-9	-17	-19	13	12	8	11
10000	25	18	10	10	15	5	3	-28	-20	-10	-11	-17	-27	-30	14	14	10	13
18000	41	25	13	23	23	11	8	-47	-31	-14	-27	-28	-45	-49	20	20	11	19
MEMPHIS																		
5000	-5	-3	-2	0	-3	-11	-13	3	1	2	0	1	-6	-8	13	13	9	11
10000	-7	-4	-2	0	-4	-12	-15	1	1	1	0	0	-7	-9	14	14	10	13
18000	-15	-5	4	-3	-4	-17	-21	0	-4	-4	-2	-3	-14	-17	20	19	11	18
MEMPHIS																		
5000	10	6	5	5	6	-1	-2	-12	-9	-5	-7	-8	-16	-18	13	12	9	11
10000	19	13	8	9	11	3	0	-24	-16	-9	-11	-15	-25	-27	14	14	10	13
18000	29	16	11	17	17	5	2	-41	-25	-13	-24	-25	-40	-44	20	20	12	19

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

00A—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADINGS

◆ HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
◆◆◆--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT OF LIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	EQUIVALENT HEADWIND IN KNOTS														STANDARD DEVIATION
	DIRECT							REVERSE							
	JAN	APR	JUL	OCT	0050	A75	A85	JAN	APR	JUL	OCT	0050	A75	A85	
MEMPHIS															
5000	-7	-5	-3	-5	-5	-10	-12	6	4	3	5	4	0	-1	1537 N.M.I.
10000	-19	-12	-7	-12	-13	-19	-21	18	11	7	11	11	5	3	
18000	-34	-23	-16	-24	-24	-34	-37	28	19	14	21	19	10	8	
MEMPHIS															
5000	-7	-3	-2	-7	-5	-11	-13	5	2	1	6	3	-2	-3	1893 N.M.I.
10000	-14	-8	-8	-11	-11	-17	-18	11	7	7	10	8	2	1	
18000	-24	-15	-12	-19	-18	-26	-28	15	10	9	13	11	3	1	
MEXICO CITY															
5000	3	5	5	0	3	-2	-3	-5	-6	-5	-1	-5	-10	-12	1595 N.M.I.
10000	3	3	2	0	1	-3	-5	-7	-5	-3	-2	-5	-10	-12	
18000	3	2	1	0	1	-6	-7	-15	-9	-3	-5	-8	-16	-19	
MEXICO CITY															
5000	1	3	5	0	2	-3	-4	-2	-4	-6	0	-4	-9	-10	1733 N.M.I.
10000	-2	0	1	-2	-1	-6	-8	-1	-1	-2	0	-1	-7	-8	
18000	-6	-3	0	-4	-3	-11	-13	-4	-3	-2	0	-3	-10	-12	
MEXICO CITY															
5000	5	6	6	3	5	1	0	-5	-6	-5	-3	-5	-9	-10	1311 N.M.I.
10000	-5	-3	3	0	-1	-7	-8	3	2	-3	-1	0	-5	-6	
18000	-17	-13	4	-4	-6	-17	-20	10	8	-4	2	2	-5	-7	
MEXICO CITY															
5000	7	7	3	2	4	0	-1	-8	-7	-3	-2	-5	-10	-12	1693 N.M.I.
10000	13	10	3	4	6	1	0	-16	-12	-3	-5	-9	-16	-18	
18000	24	15	1	11	11	2	0	-32	-21	-2	-15	-17	-29	-32	
MEXICO CITY															
5000	4	7	2	0	3	-2	-3	-5	-7	-2	0	-4	-10	-11	804 N.M.I.
10000	8	7	0	1	3	-2	-3	-9	-7	0	-1	-4	-11	-12	
18000	17	12	-3	6	6	-2	-4	-21	-15	3	-7	-9	-20	-23	
MEXICO CITY															
5000	7	6	3	2	4	0	-2	-8	-7	-3	-3	-5	-11	-12	1747 N.M.I.
10000	12	9	4	4	6	1	0	-15	-11	-4	-5	-9	-15	-17	
18000	21	12	1	10	9	1	0	-30	-19	-3	-14	-16	-27	-30	
MEXICO CITY															
5000	4	5	5	3	4	0	0	-4	-6	-4	-2	-5	-8	-9	1385 N.M.I.
10000	-6	-4	3	0	-1	-7	-9	5	3	-3	-1	0	-5	-6	
18000	-19	-15	4	-3	-7	-18	-21	13	11	-4	2	4	-4	-5	

* HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

**—DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWIND RETURN												STANDARD DEVIATION					
	DIRECT						RETURN						JAN APR JUL OCT					
	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT
MEXICO CITY																		
5000	0	3	-1	-1	0	-5	-6	0	-3	1	1	0	-5	-6	8	8	5	7
10000	6	5	-1	1	2	-3	-4	-6	-6	1	-1	-3	-9	-10	8	8	6	7
18000	18	15	-3	6	7	-1	-3	-19	-17	3	-7	-9	-20	-22	12	11	6	9
MEXICO CITY																		
5000	7	7	3	2	4	0	-1	-8	-7	-3	-2	-5	-11	-12	9	8	6	7
10000	12	9	3	4	6	0	0	-15	-11	-3	-5	-8	-15	-17	9	9	6	8
18000	22	13	0	10	10	1	0	-30	-19	-1	-13	-15	-27	-30	13	12	7	12
MEXICO CITY																		
5000	1	3	5	0	2	-2	-4	-2	-4	-5	0	-3	-8	-10	8	8	6	7
10000	-3	-1	1	-2	-1	-7	-8	0	0	-1	1	0	-5	-6	8	8	6	8
18000	-13	-5	0	-5	-5	-13	-15	-1	0	-1	1	-1	-8	-9	13	12	7	11
MEXICO CITY																		
5000	6	7	4	1	4	-1	-2	-7	-8	-4	-1	-5	-11	-13	9	9	6	8
10000	8	6	2	2	4	-1	-3	-11	-8	-2	-3	-6	-13	-14	9	9	7	9
18000	13	8	0	4	4	-3	-4	-22	-14	0	-6	-10	-21	-24	14	13	7	12
MEXICO CITY																		
5000	7	6	4	2	4	0	-1	-8	-7	-4	-2	-6	-11	-12	9	8	6	7
10000	11	8	3	4	6	0	-1	-14	-10	-4	-5	-8	-15	-16	9	9	7	8
18000	18	10	0	7	7	0	-2	-28	-17	-2	-12	-14	-26	-28	13	13	7	12
MEXICO CITY																		
5000	5	6	2	1	3	-1	-2	-6	-7	-2	-1	-4	-9	-11	8	8	5	7
10000	11	9	1	2	5	0	-2	-12	-10	-1	-3	-6	-13	-15	9	9	6	8
18000	22	16	-1	9	10	0	-1	-27	-20	1	-11	-14	-26	-28	12	12	7	11
MEXICO CITY																		
5000	8	7	3	2	4	0	-1	-17	-13	-3	-3	-6	-11	-13	8	8	5	7
10000	14	11	4	5	7	2	0	-17	-13	-3	-6	-10	-17	-19	9	9	6	8
18000	26	16	2	12	12	3	1	-34	-22	-4	-17	-19	-31	-33	12	12	7	11
MEXICO CITY																		
5000	6	6	4	2	4	0	-1	-9	-7	-4	-3	-6	-11	-12	9	8	6	7
10000	10	7	3	4	5	0	-1	-13	-9	-4	-5	-8	-14	-16	9	9	7	8
18000	15	9	1	6	6	-1	-2	-26	-16	-3	-11	-13	-24	-27	13	13	7	12
MEXICO CITY																		
5000	5	5	5	3	4	1	0	-5	-5	-4	-3	-5	-8	-9	6	6	4	5
10000	-6	-3	1	-1	-2	-7	-9	4	2	-1	0	0	-3	-5	8	7	5	7
18000	-17	-12	0	-8	-9	-10	-21	9	7	-1	4	3	-3	-5	13	12	7	11

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION							
	DIRECT					RETURN												
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
MIDWAY ISLAND																		
5000	0	-1	3	-1	0	-7	-9	-4	-1	-5	-1	-3	-11	-13	13	11	9	1519 N.M.I.
10000	-3	-4	0	-7	-4	-11	-13	-3	0	-2	3	-1	-8	-10	12	11	9	
18000	-9	-11	-9	-14	-11	-20	-23	-7	0	5	3	0	-9	-11	16	14	11	13
MIDWAY ISLAND																		
5000	-5	0	4	3	0	-5	-6	4	0	-5	-3	-2	-7	-8	9	7	6	1026 N.M.I.
10000	-2	-3	4	4	0	-5	-7	1	2	-3	-4	-1	-7	-8	11	8	6	7
18000	-24	-11	0	0	-7	-18	-21	19	9	0	0	5	-2	-4	14	11	8	10
MINN-ST PAUL																		
5000	-12	-6	-5	-10	-9	-18	-20	11	5	5	9	7	-1	-3	13	14	11	309 N.M.I.
10000	-21	-12	-13	-16	-16	-25	-27	20	11	13	15	14	5	3	13	14	11	14
18000	-33	-22	-22	-28	-26	-39	-42	29	19	20	24	22	10	7	20	19	14	19
MINN-ST PAUL																		
5000	-4	-4	-4	-3	-4	-13	-11	3	4	4	3	3	-1	-3	8	9	7	1116 N.M.I.
10000	-14	-8	-9	-10	-11	-17	-19	12	7	9	9	9	2	1	11	10	8	10
18000	-28	-21	-19	-20	-22	-32	-35	22	17	18	16	18	6	6	18	16	10	15
MINN-ST PAUL																		
5000	13	8	7	9	9	1	0	-14	-9	-7	-9	-10	-18	-20	13	12	9	774 N.M.I.
10000	25	16	15	14	17	8	6	-27	-18	-15	-16	-19	-28	-31	14	14	10	13
18000	38	25	21	24	26	14	11	-44	-29	-22	-29	-30	-44	-48	20	20	12	19
MINN-ST PAUL																		
5000	0	0	0	1	0	-7	-8	-2	-1	0	-2	-1	-8	-10	12	11	8	904 N.M.I.
10000	0	0	0	1	0	-7	-9	-6	-4	-1	-4	-4	-12	-14	12	12	9	12
18000	-4	0	3	2	0	-10	-12	-13	-10	-5	-10	-9	-20	-23	18	17	10	17
MINN-ST PAUL																		
5000	13	7	8	10	9	1	0	-14	-8	-8	-10	-10	-19	-21	13	13	10	12
10000	25	15	16	17	19	9	6	-26	-16	-16	-18	-19	-29	-31	14	15	11	13
18000	38	24	24	26	27	15	11	-43	-23	-24	-30	-31	-45	-48	21	20	13	20
MINN-ST PAUL																		
5000	-4	-4	-4	-2	-4	-9	-10	3	4	4	2	3	-1	-2	8	8	6	1348 N.M.I.
10000	-13	-8	-9	-9	-10	-16	-18	11	7	9	8	8	2	1	10	10	7	7
18000	-28	-21	-18	-19	-21	-31	-34	21	17	17	15	17	8	5	17	15	10	14
MINN-ST PAUL																		
5000	4	3	2	3	2	-3	-4	-6	-4	-2	-4	-4	-11	-12	11	10	7	9
10000	9	7	4	4	5	-1	-2	-14	-10	-4	-6	-9	-16	-18	11	11	8	11
18000	12	11	6	9	8	0	-2	-27	-20	-8	-16	-17	-29	-32	16	16	9	15

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND MEAN IN KNOTS												STANDARD DEVIATION		
	DIRECT						RETURN								
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	DEC
MINN-ST PAUL 5000	12	8	7	8	8	0	-1	-14	-9	-7	-9	-10	-18	-21	630 N.M.I.
10000	24	15	14	14	16	7	5	-26	-17	-15	-15	-18	-28	-30	13 13 10 12
18000	37	24	21	24	25	13	10	-43	-23	-22	-29	-30	-44	-48	14 15 11 13
MINN-ST PAUL 5000	-11	-5	-5	-10	-8	-17	-19	10	4	4	9	6	-1	-4	569 N.M.I.
10000	-21	-12	-13	-16	-16	-25	-27	20	11	12	15	14	5	3	13 13 11 13
18000	-32	-21	-21	-25	-25	-37	-40	28	18	13	23	21	9	7	12 13 11 13
MINN-ST PAUL 5000	5	3	1	3	2	-5	-7	-7	-4	-1	-	-4	-13	-15	407 N.M.I.
10000	8	5	4	5	5	-3	-6	-13	-8	-6	-8	-9	-19	-21	14 14 10 12
18000	9	4	4	10	7	-5	-8	-25	-15	-10	-12	-17	-30	-34	14 15 12 14
MINN-ST PAUL 5000	13	7	7	9	8	0	-1	-14	-4	-7	-10	-10	-19	-21	470 N.M.I.
10000	24	14	15	16	17	7	5	-25	-16	-16	-17	-19	-29	-31	14 14 10 12
18000	37	24	23	26	26	14	10	-42	-28	-24	-30	-30	-45	-48	14 15 12 14
MINN-ST PAUL 5000	9	6	4	5	5	-1	-2	-10	-7	-4	-6	-7	-14	-16	879 N.M.I.
10000	16	11	8	8	10	2	0	-20	-14	-8	-10	-13	-22	-24	12 12 8 10
18000	21	17	11	15	15	4	1	-35	-24	-14	-22	-23	-36	-40	13 13 10 12
MINN-ST PAUL 5000	-1	0	1	1	0	-5	-7	0	0	-2	-2	-1	-7	-8	1994 N.M.I.
10000	-3	0	0	0	-1	-7	-8	1	0	0	0	0	-5	-7	8 8 8 8
18000	-2	-2	-2	-2	-3	-10	-12	-3	-1	0	-3	-2	-10	-12	8 8 8 8
MINN-ST PAUL 5000	14	7	8	10	9	2	0	-15	-9	-3	-10	-11	-19	-20	911 N.M.I.
10000	25	16	16	17	18	9	7	-27	-17	-16	-18	-20	-29	-31	12 12 9 11
18000	39	25	23	26	27	15	12	-44	-29	-24	-30	-31	-44	-48	13 14 10 12
MINN-ST PAUL 5000	13	6	8	10	9	0	-1	-14	-7	-8	-11	-10	-19	-22	421 N.M.I.
10000	24	13	16	17	17	7	5	-25	-15	-16	-18	-19	-29	-31	14 14 11 13
18000	36	23	24	26	26	13	10	-41	-27	-25	-30	-30	-44	-48	14 15 12 14
MINN-ST PAUL 5000	-10	-5	-4	-8	-7	-13	-15	10	5	4	7	6	0	-1	1143 N.M.I.
10000	-20	-11	-11	-15	-15	-22	-23	20	10	11	14	13	6	5	10 9 7 9
18000	-32	-22	-22	-28	-26	-37	-39	29	19	21	25	23	13	10	10 10 8 10

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET		EQUIVALENT HEADWIND IN KNOTS												STANDARD DEVIATION					
		DIRECT				RETURN													
		JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
MINN-ST PAUL	TO																		
	5000	-6	-3	-2	-9	-5	-12	-14	5	2	2	7	3	-2	-4	10	10	9	11
	10000	-15	-8	-10	-13	-5	-12	-20	14	7	9	12	10	4	2	9	9	8	9
	18000	-24	-15	-14	-20	-18	-28	-30	20	12	12	16	14	5	3	14	13	11	14
MINOT AFB	TO																		
	5000	-5	-3	-3	-3	-4	-9	-10	4	3	3	2	3	-2	-3	8	8	6	8
	10000	-8	-4	-7	-6	-7	-13	-15	5	3	7	5	5	-1	-3	11	10	8	9
	18000	-18	-14	-17	-14	-16	-27	-29	9	9	14	8	10	0	-3	18	17	11	16
MINOT AFB	TO																		
	5000	12	7	7	9	8	1	0	-13	-8	-7	-9	-10	-17	-19	11	11	9	10
	10000	22	14	14	14	15	8	6	-24	-15	-15	-16	-18	-26	-28	12	12	9	11
	18000	34	22	21	24	24	14	11	-40	-27	-23	-28	-29	-41	-44	18	17	11	17
MINOT AFB	TO																		
	5000	4	2	0	4	2	-4	-5	-6	-3	-1	-5	-4	-11	-12	10	10	8	10
	10000	8	5	2	6	5	-1	-3	-13	-8	-3	-8	-8	-16	-18	11	11	8	11
	18000	9	8	6	10	8	-1	-3	-23	-16	-9	-16	-16	-26	-29	17	16	10	15
MINOT AFB	TO																		
	5000	12	6	7	9	8	1	0	-13	-7	-7	-10	-10	-17	-19	12	12	9	11
	10000	22	13	15	16	16	8	6	-24	-14	-16	-17	-18	-27	-29	12	13	10	12
	18000	34	22	23	25	25	14	12	-30	-25	-24	-29	-29	-40	-44	18	17	12	17
MINOT AFB	TO																		
	5000	-5	-3	-2	-2	-3	-8	-10	5	3	3	2	3	-1	-2	8	8	6	7
	10000	-8	-5	-7	-7	-7	-13	-15	5	4	7	5	5	0	-2	10	10	7	9
	18000	-19	-15	-16	-15	-17	-27	-29	10	10	15	9	11	1	-1	17	16	11	15
MINOT AFB	TO																		
	5000	6	4	2	5	4	-1	-3	-8	-5	-2	-5	-5	-11	-13	10	9	7	9
	10000	12	9	5	7	8	1	0	-16	-11	-6	-9	-11	-18	-20	10	10	8	10
	18000	18	14	9	13	12	4	2	-29	-21	-11	-19	-19	-30	-33	15	14	9	14
MINOT AFB	TO																		
	5000	11	6	6	9	7	0	-1	-13	-7	-6	-9	-9	-17	-19	12	12	9	11
	10000	22	13	14	14	15	7	5	-24	-15	-14	-16	-18	-26	-28	12	13	10	12
	18000	33	22	21	24	24	13	11	-39	-26	-22	-28	-28	-40	-43	18	17	11	17
MINOT AFB	TO																		
	5000	-3	-1	0	-6	-3	-8	-10	2	7	7	5	1	-4	-5	8	7	7	9
	10000	-11	-6	-7	-10	-9	-14	-15	10	5	7	9	7	2	1	4	4	7	7
	18000	-20	-11	-11	-15	-15	-22	-24	17	8	9	12	11	4	2	11	10	9	10

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MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWIND IN D.S.												STANDARD DEVIATION					
	DIRECT						RETURN											
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
MINDT AFB																		
5000	-10	-4	-3	-8	-7	-16	-18	9	3	3	7	5	-3	-6	14	14	105	105
10000	-19	-11	-11	-15	-14	-23	-25	18	10	10	14	12	4	2	13	13	11	14
18000	-29	-18	-17	-25	-22	-35	-38	25	16	14	21	18	6	3	26	18	15	19
MINDT AFB																		
5000	9	5	3	7	5	-2	-3	-11	-6	-3	-8	-7	-15	-18	12	12	762	762
10000	16	10	8	11	11	2	0	-19	-12	-9	-13	-13	-22	-24	13	13	10	12
18000	22	15	13	18	16	5	2	-31	-20	-16	-24	-22	-35	-38	19	18	12	18
MINDT AFB																		
5000	11	6	6	9	7	0	-1	-12	-7	-7	-10	-9	-17	-19	12	12	845	845
10000	22	12	14	14	15	7	5	-23	-14	-15	-17	-18	-26	-28	12	13	10	12
18000	33	21	22	25	24	13	10	-37	-25	-24	-28	-28	-40	-43	19	18	12	18
MINDT AFB																		
5000	10	6	4	6	6	0	-1	-11	-7	-6	-7	-8	-14	-16	11	10	1264	1264
10000	18	12	9	10	12	4	2	-21	-14	-10	-12	-15	-22	-24	11	12	8	10
18000	24	18	14	19	17	8	5	-35	-24	-16	-24	-24	-36	-39	17	16	10	16
MINDT AFB																		
5000	-1	0	2	1	0	-5	-6	0	0	-2	-3	-1	-7	-9	8	8	1005	1005
10000	-4	0	0	-1	-2	-7	-8	2	-1	3	0	0	-6	-7	8	8	8	9
18000	-3	-1	0	-2	-2	-9	-11	-1	-2	-2	-2	-2	-10	-12	12	11	10	11
MINDT AFB																		
5000	12	6	8	9	8	1	0	-13	-7	-8	-13	-10	-17	-19	11	11	1200	1200
10000	23	13	15	16	16	8	7	-24	-15	-16	-17	-18	-26	-28	12	12	8	10
18000	34	22	23	25	25	15	12	-39	-26	-25	-29	-30	-41	-43	17	16	11	16
MINDT AFB																		
5000	11	5	7	10	8	0	-1	-12	-6	-7	-11	-9	-17	-19	12	12	776	776
10000	22	12	15	16	16	7	5	-23	-13	-16	-17	-18	-26	-29	12	13	11	13
18000	33	21	24	25	25	14	11	-37	-24	-25	-29	-29	-41	-44	19	18	12	18
MINDT AFB																		
5000	-11	-5	-3	-7	-7	-14	-15	10	5	3	7	6	0	-2	10	10	796	796
10000	-19	-10	-10	-14	-14	-21	-23	18	10	10	14	12	5	4	11	11	8	10
18000	-29	-19	-20	-26	-24	-35	-38	25	16	19	22	20	9	6	18	17	13	17
MINDT AFB																		
5000	-5	-2	-1	-7	-4	-11	-13	4	1	1	6	2	-4	-5	11	10	959	959
10000	-14	-7	-8	-12	-11	-17	-19	13	6	6	11	9	2	1	15	9	9	11
18000	-22	-12	-11	-16	-16	-26	-28	18	1	3	14	12	2	0	15	14	12	14

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 00450--NOTES A WIND EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 PLUS SIGN DENOTES HEADWINDS.

SALES ARE AT 13.1% FOR THE YEAR. THE COMPANY HAS A 13.1% SHARE OF THE MARKET.

[illegible][illegible]

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT in FEET	MONTHS												STANDARD DEVIATION
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
MAGNANA FALLS													
WELLS AFB	7	6	5	5	5	5	5	5	5	5	5	5	1702 N.M.I.
5000	10	12	11	12	12	12	12	12	12	12	12	12	0
10000	31	22	19	21	22	22	22	22	22	22	22	22	10
WELLS AFB	4	3	2	2	2	2	2	2	2	2	2	2	232 N.M.I.
5000	7	6	5	5	5	5	5	5	5	5	5	5	10
10000	24	21	18	20	21	21	21	21	21	21	21	21	15
WELLS AFB	3	3	3	3	3	3	3	3	3	3	3	3	1002 N.M.I.
5000	6	6	6	6	6	6	6	6	6	6	6	6	0
10000	16	12	10	11	11	11	11	11	11	11	11	11	9
WELLS AFB	7	6	5	5	5	5	5	5	5	5	5	5	1047 N.M.I.
5000	10	12	11	12	12	12	12	12	12	12	12	12	0
10000	31	22	19	21	22	22	22	22	22	22	22	22	10
WELLS AFB	4	3	2	2	2	2	2	2	2	2	2	2	962 N.M.I.
5000	7	6	5	5	5	5	5	5	5	5	5	5	0
10000	16	12	10	11	11	11	11	11	11	11	11	11	9
WELLS AFB	7	6	5	5	5	5	5	5	5	5	5	5	1190 N.M.I.
5000	10	12	11	12	12	12	12	12	12	12	12	12	0
10000	31	22	19	21	22	22	22	22	22	22	22	22	10
WELLS AFB	4	3	2	2	2	2	2	2	2	2	2	2	1530 N.M.I.
5000	7	6	5	5	5	5	5	5	5	5	5	5	0
10000	16	12	10	11	11	11	11	11	11	11	11	11	9
WELLS AFB	7	6	5	5	5	5	5	5	5	5	5	5	1692 N.M.I.
5000	10	12	11	12	12	12	12	12	12	12	12	12	0
10000	31	22	19	21	22	22	22	22	22	22	22	22	10
WELLS AFB	4	3	2	2	2	2	2	2	2	2	2	2	1606 N.M.I.
5000	7	6	5	5	5	5	5	5	5	5	5	5	0
10000	16	12	10	11	11	11	11	11	11	11	11	11	9

WELLS AFB - COMBINED FOR A 120-KT AIRSPEED.
 10000 - 20000 - 30000 - 40000 - 50000 - 60000 - 70000 - 80000 - 90000 - 100000 - 110000 - 120000 - 130000 - 140000 - 150000 - 160000 - 170000 - 180000 - 190000 - 200000 - 210000 - 220000 - 230000 - 240000 - 250000 - 260000 - 270000 - 280000 - 290000 - 300000 - 310000 - 320000 - 330000 - 340000 - 350000 - 360000 - 370000 - 380000 - 390000 - 400000 - 410000 - 420000 - 430000 - 440000 - 450000 - 460000 - 470000 - 480000 - 490000 - 500000 - 510000 - 520000 - 530000 - 540000 - 550000 - 560000 - 570000 - 580000 - 590000 - 600000 - 610000 - 620000 - 630000 - 640000 - 650000 - 660000 - 670000 - 680000 - 690000 - 700000 - 710000 - 720000 - 730000 - 740000 - 750000 - 760000 - 770000 - 780000 - 790000 - 800000 - 810000 - 820000 - 830000 - 840000 - 850000 - 860000 - 870000 - 880000 - 890000 - 900000 - 910000 - 920000 - 930000 - 940000 - 950000 - 960000 - 970000 - 980000 - 990000 - 1000000

SEALING AND TRACING FOR CIRCULAR ROUTES

MONTH IN YEAR		CUMULATIVE MEAN IN D 20												STANDARD DEVIATION												
YEAR		PERIOD												PERIOD												
JAN	FEB	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
WALLIS AFB	1950	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1951	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1952	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1953	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1954	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1955	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1956	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1957	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1958	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1959	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1960	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1961	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1962	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1963	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1964	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1965	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1966	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1967	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1968	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1969	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1970	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1971	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1972	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1973	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1974	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1975	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1976	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1977	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1978	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1979	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1980	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1981	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1982	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1983	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1984	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1985	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1986	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1987	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1988	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1989	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1990	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1991	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1992	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1993	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1994	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1995	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1996	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1997	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1998	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	1999	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2000	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2001	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2002	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2003	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2004	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2005	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2006	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2007	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2008	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2009	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
WALLIS AFB	2010	0	5	10	15	20	25	30	35																	

[illegible]

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND IN KNOTS	WIND DIRECTION												STANDARD DEVIATION
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
WIND CUMULATED	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	
5000	-10	-7	-5	-3	-2	-1	0	0	0	0	0	0	305 N.M.I.
10000	-20	-14	-10	-7	-5	-3	-2	-1	0	0	0	0	15 14 10 12
15000	-27	-21	-16	-11	-8	-5	-3	-2	-1	0	0	0	16 16 11 14
20000	-32	-26	-20	-14	-10	-7	-5	-3	-2	-1	0	0	23 23 14 22
WIND CUMULATED	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	
5000	-7	-5	-3	-2	-1	0	0	0	0	0	0	0	412 N.M.I.
10000	-16	-12	-8	-5	-3	-2	-1	0	0	0	0	0	13 12 9 12
15000	-23	-18	-12	-8	-5	-3	-2	-1	0	0	0	0	15 15 10 14
20000	-30	-24	-17	-11	-8	-5	-3	-2	-1	0	0	0	21 21 12 20
WIND CUMULATED	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	
5000	-12	-9	-6	-4	-3	-2	-1	0	0	0	0	0	228 N.M.I.
10000	-24	-18	-12	-8	-5	-3	-2	-1	0	0	0	0	15 15 10 12
15000	-34	-26	-18	-12	-8	-5	-3	-2	-1	0	0	0	17 17 12 15
20000	-41	-32	-23	-15	-10	-7	-5	-3	-2	-1	0	0	24 24 14 23
WIND CUMULATED	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	
5000	-13	-10	-7	-5	-3	-2	-1	0	0	0	0	0	305 N.M.I.
10000	-26	-20	-14	-9	-6	-4	-3	-2	-1	0	0	0	15 14 10 12
15000	-41	-32	-23	-15	-10	-7	-5	-3	-2	-1	0	0	16 16 11 14
20000	-50	-40	-30	-20	-14	-9	-6	-4	-3	-2	-1	0	23 22 14 22
WIND CUMULATED	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	
5000	-12	-9	-6	-4	-3	-2	-1	0	0	0	0	0	1917 N.M.I.
10000	-24	-18	-12	-8	-5	-3	-2	-1	0	0	0	0	9 8 6 8
15000	-36	-28	-20	-13	-9	-6	-4	-3	-2	-1	0	0	9 9 7 9
20000	-45	-36	-27	-18	-12	-8	-5	-3	-2	-1	0	0	14 14 9 14
WIND CUMULATED	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	
5000	-10	-7	-5	-3	-2	-1	0	0	0	0	0	0	1093 N.M.I.
10000	-20	-14	-10	-7	-5	-3	-2	-1	0	0	0	0	9 9 7 9
15000	-27	-21	-16	-11	-8	-5	-3	-2	-1	0	0	0	9 9 8 9
20000	-34	-28	-21	-14	-10	-7	-5	-3	-2	-1	0	0	13 12 9 13
WIND CUMULATED	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	
5000	-1	2	0	0	0	0	0	0	0	0	0	0	1919 N.M.I.
10000	5	3	0	0	0	0	0	0	0	0	0	0	4 5 5 5
15000	9	6	-3	0	0	0	0	0	0	0	0	0	5 5 6 5
20000	16	11	-3	1	1	1	1	1	1	1	1	1	8 8 6 6
WIND CUMULATED	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	
5000	-2	-1	0	0	0	0	0	0	0	0	0	0	1970 N.M.I.
10000	-4	-3	-1	0	0	0	0	0	0	0	0	0	5 5 5 5
15000	-6	-5	-3	-1	0	0	0	0	0	0	0	0	6 6 6 6
20000	-12	-10	-7	-5	-3	-2	-1	0	0	0	0	0	8 8 6 6
WIND CUMULATED	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	
5000	-2	-1	0	0	0	0	0	0	0	0	0	0	1368 N.M.I.
10000	-4	-3	-1	0	0	0	0	0	0	0	0	0	6 6 6 6
15000	-6	-5	-3	-1	0	0	0	0	0	0	0	0	7 7 6 6
20000	-12	-10	-7	-5	-3	-2	-1	0	0	0	0	0	12 10 8 9

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.
 000--00000 ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT DELIABILITIES.
 *THUS SIG. 30000S HEADWINDS.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

POSITION IN DEG	MONTHLY AVERAGE												STANDARD DEVIATION
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN APR JUL OCT
Wb OCEANS	TO	TO	240000										
5000	-2	-7	-3	1	-3	-3	-3	-3	-3	-3	-3	-3	7 6 052 N.M.I.
10000	-12	-10	-1	-2	-6	-13	-14	-14	-14	-14	-14	-14	7 6 7 5
15000	-36	-20	0	-12	-10	-33	-36	-36	-36	-36	-36	-36	13 12 6 10
Wb OCEANS	TO	TO	240000										
5000	0	5	4	4	5	-1	-3	-3	-3	-3	-3	-3	12 11 6 948 N.M.I.
10000	14	10	5	4	0	0	-1	-1	-1	-1	-1	-1	12 12 9 10
15000	21	11	4	12	10	0	-2	-2	-2	-2	-2	-2	10 10 10 17
Wb OCEANS	TO	TO	240000										
5000	-4	-3	0	0	0	-7	-9	-9	-9	-9	-9	-9	6 7 5 1491 N.M.I.
10000	-16	-12	-1	-6	-2	-16	-10	-10	-10	-10	-10	-10	9 6 6 7
15000	-34	-20	-4	-16	-20	-33	-36	-36	-36	-36	-36	-36	15 13 6 12
Wb OCEANS	TO	TO	240000										
5000	1	3	1	3	2	-3	-3	-3	-3	-3	-3	-3	11 11 7 507 N.M.I.
10000	19	12	1	4	7	0	-2	-2	-2	-2	-2	-2	12 12 8 11
15000	30	26	1	13	16	3	1	1	1	1	1	1	16 16 9 14
Wb OCEANS	TO	TO	240000										
5000	0	6	4	4	3	-1	-3	-3	-3	-3	-3	-3	12 11 8 792 N.M.I.
10000	13	11	3	6	0	0	-1	-1	-1	-1	-1	-1	13 13 9 10
15000	25	14	3	13	12	1	0	0	0	0	0	0	16 16 10 17
Wb OCEANS	TO	TO	240000										
5000	-7	-3	-1	-3	-4	-11	-13	-13	-13	-13	-13	-13	10 10 8 1390 N.M.I.
10000	-14	-8	-4	-9	-9	-16	-10	-10	-10	-10	-10	-10	10 10 8 9
15000	-24	-17	-10	-10	-17	-27	-30	-30	-30	-30	-30	-30	16 15 9 14
Wb OCEANS	TO	TO	240000										
5000	2	1	1	0	3	-4	-9	-9	-9	-9	-9	-9	13 13 8 512 N.M.I.
10000	6	1	1	3	3	-9	-10	-10	-10	-10	-10	-10	13 14 10 13
15000	-2	-5	-3	-3	-4	-15	-10	-10	-10	-10	-10	-10	20 19 11 10
Wb OCEANS	TO	TO	240000										
5000	0	3	3	1	3	-2	-4	-4	-4	-4	-4	-4	12 11 8 831 N.M.I.
10000	16	7	4	4	6	-1	-3	-3	-3	-3	-3	-3	13 13 9 10
15000	14	6	2	7	6	-3	-3	-3	-3	-3	-3	-3	10 10 10 17
Wb OCEANS	TO	TO	240000										
5000	11	8	4	4	6	0	-2	-2	-2	-2	-2	-2	12 11 8 542 N.M.I.
10000	20	16	5	5	10	2	0	0	0	0	0	0	13 13 8 10
15000	34	24	3	17	14	5	2	2	2	2	2	2	16 16 10 16

CONVERSIONS - FROM THE 120-AT AIRPORT.
 CONVERSIONS - FROM THE 120-AT AIRPORT.
 CONVERSIONS - FROM THE 120-AT AIRPORT.

EQUIVALENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN FEET	MONTHLY AVERAGE HEADWINDS												STANDARD DEVIATION
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN APR JUL OCT
NEW ORLEANS													
5000	11	7	5	5	6	0	-1	-1	-12	-8	-5	-5	11 10 7 9
10000	20	15	0	0	12	4	2	-16	-24	-17	-8	-9	12 12 0 11
15000	33	19	0	10	17	6	4	-43	-62	-27	-10	-23	17 17 9 16
NEW ORLEANS													
5000	5	2	1	2	2	-1	-5	-13	-7	-4	-3	-3	12 11 0 10
10000	7	3	3	3	4	-3	-5	-10	-13	-8	-4	-5	12 13 9 12
15000	9	3	1	4	3	-6	-8	-26	-26	-14	-4	-12	18 18 10 17
NEW ORLEANS													
5000	-3	-2	0	-2	-2	-7	-8	-2	2	2	0	2	0 8 6 7
10000	-10	-10	-4	-9	-10	-10	-10	-14	14	9	3	8	9 8 7 8
15000	-31	-22	-11	-21	-31	-34	-34	-24	24	17	9	17	15 14 9 13
VIENNA FALLS													
5000	-8	-9	-5	-4	-6	-11	-13	-7	7	5	5	4	0 8 6 7
10000	-14	-12	-10	-12	-13	-20	-21	-12	16	11	12	11	0 9 7 8
15000	-30	-23	-19	-21	-23	-35	-38	-29	29	21	18	19	15 14 8 13
VIENNA FALLS													
5000	-4	-1	0	-1	-2	-8	-10	-1	1	0	0	0	11 11 7 10
10000	-6	-4	-1	-1	-4	-11	-13	-6	0	0	0	1	12 12 0 11
15000	-10	-6	-2	-9	-8	-14	-23	-2	-2	-4	3	2	18 18 10 17
VIENNA FALLS													
5000	-4	-2	-2	-4	-4	-13	-15	-3	3	0	1	4	15 15 10 12
10000	-14	-8	-5	-8	-9	-20	-22	-6	6	3	3	5	17 17 12 15
15000	-27	-11	-8	-10	-15	-31	-35	-6	6	0	4	8	24 24 14 23
VIENNA FALLS													
5000	-12	-6	-7	-10	-9	-16	-18	-11	11	5	6	9	11 11 9 11
10000	-23	-14	-15	-17	-14	-25	-27	-21	21	12	15	16	11 12 9 11
15000	-36	-24	-24	-24	-28	-39	-42	-31	31	23	22	24	17 16 11 16
VIENNA FALLS													
5000	-14	-8	-4	-9	-9	-14	-20	-12	12	7	6	8	14 13 9 11
10000	-26	-16	-12	-14	-18	-27	-30	-23	23	15	11	13	14 15 11 13
15000	-43	-27	-19	-30	-29	-44	-48	-36	36	21	17	22	21 21 13 21
VIENNA FALLS													
5000	-16	-9	-8	-10	-11	-20	-22	-14	14	8	8	10	15 15 10 12
10000	-20	-19	-14	-17	-20	-31	-34	-27	27	17	15	16	17 17 12 15
15000	-47	-33	-23	-32	-32	-49	-53	-43	43	25	22	27	24 24 15 23

COMPARISONS—COMPUTED FOR A 120-KT AIRSPEED.

001—REPRESENTS ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 01005 5100 51005 HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WIND in FEET	EQUALLY VALUABLE MONTHS												STANDARD DEVIATION			
	WINTER				SUMMER				RETURN				JAN	APR	JUL	OCT
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
NADIA FALLS	TO															
5000	-3	-1	0	-2	-2	-10	-11									
10000	-8	-3	-2	-4	-3	-14	-16									
15000	-21	-7	-3	-12	-10	-24	-20									
NADIA FALLS	TO															
5000	19	9	9	10	10	1	0									
10000	20	10	16	16	19	6	6									
15000	42	20	23	27	20	15	11									
NADIA FALLS	TO															
5000	-19	-9	-8	-9	-11	-20	-22									
10000	-27	-16	-16	-17	-20	-30	-33									
15000	-44	-29	-24	-29	-31	-47	-51									
NADIA FALLS	TO															
5000	-12	-6	-3	-9	-9	-14	-16									
10000	-22	-13	-13	-16	-16	-23	-24									
15000	-36	-21	-23	-28	-27	-37	-40									
NADIA FALLS	TO															
5000	-7	-4	-3	-9	-7	-13	-14									
10000	-16	-9	-12	-13	-13	-19	-21									
15000	-26	-17	-19	-21	-21	-30	-32									
NADIA FALLS	TO															
5000	-2	0	2	0	0	-3	-6									
10000	3	3	14	9	7	1	0									
15000	0	9	17	14	11	5	3									
NADIA FALLS	TO															
5000	0	3	2	4	2	-1	-2									
10000	-4	-4	-10	-3	-4	-11	-12									
15000	0	-6	-13	-6	-7	-13	-15									
NADIA FALLS	TO															
5000	-2	0	4	0	0	-3	-6									
10000	3	6	13	10	0	1	0									
15000	7	9	17	14	11	3	1									
NADIA FALLS	TO															
5000	0	2	3	3	2	-1	-2									
10000	-1	-2	-3	-1	-3	-6	-7									
15000	1	-3	-7	-2	-3	-9	-9									

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00--SIGNIFY ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

FOUR FIFT MEANINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

[illegible][illegible]

FAMILIARITY HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

LIGHT IN EFT	FAMILIARITY HEADINGS										STANDARD DEVIATION			
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	JAN	APR	JUL	OCT
WINDS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
SCD	2	0	1	1	1	1	1	1	1	1	7	7	6	7
LOC	-3	0	0	0	-1	-1	-1	-1	-1	-1	10	8	7	8
LOC	-8	-2	1	-3	-3	-3	-3	-3	-3	-3	14	13	10	13
WINDS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
SCD	0	0	-1	-2	-1	-1	-1	-1	-1	-1	5	5	7	5
LOC	1	3	12	7	6	1	1	1	1	1	8	6	7	6
LOC	0	4	17	6	0	2	1	1	1	1	9	8	10	7
WINDS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
SCD	0	0	2	3	1	-3	-4	-4	-4	-4	7	7	7	5
LOC	-3	-3	-11	-5	-6	-12	-13	-13	-13	-13	9	7	9	7
LOC	-8	-8	-13	-9	-9	-16	-16	-16	-16	-16	11	9	12	9
WINDS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
SCD	0	-2	-5	-1	-2	-2	-2	-2	-2	-2	7	7	7	5
LOC	-3	-4	-8	-5	-5	-5	-5	-5	-5	-5	8	8	9	9
LOC	-8	-13	-15	-11	-12	-23	-22	-22	-22	-22	11	11	11	11
WINDS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
SCD	1	0	0	0	0	0	0	0	0	0	5	5	6	5
LOC	-2	-6	-15	-8	-8	-14	-15	-15	-15	-15	7	6	6	6
LOC	-8	-11	-22	-12	-13	-20	-22	-22	-22	-22	8	8	9	7
WINDS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
SCD	1	0	0	0	0	0	0	0	0	0	11	11	10	10
LOC	-1	0	0	1	0	-2	-3	-3	-3	-3	13	13	8	12
LOC	-5	-6	0	0	0	-2	-13	-16	-16	-16	10	10	10	17
WINDS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
SCD	-8	-1	-3	-4	-4	-12	-13	-13	-13	-13	9	9	7	8
LOC	-17	-11	-7	-10	-11	-18	-20	-20	-20	-20	9	10	7	9
LOC	-20	-21	-12	-20	-20	-30	-30	-30	-30	-30	14	14	9	13
WINDS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
SCD	-3	-4	-1	-3	-4	-10	-12	-12	-12	-12	11	11	8	10
LOC	-14	-11	-2	-5	-6	-16	-16	-16	-16	-16	12	12	8	12
LOC	-20	-22	-6	-14	-16	-30	-33	-33	-33	-33	18	17	9	16
WINDS	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
SCD	0	-1	0	0	-1	-7	-9	-9	-9	-9	11	11	7	10
LOC	-5	-3	-1	0	-3	-10	-12	-12	-12	-12	12	12	8	12
LOC	-12	-11	-2	-4	-7	-18	-21	-21	-21	-21	18	18	10	17

STANDARD DEVIATION--COMPUTED FOR A 120-KT AIRSPEED.

--POSITIVE NUMERICAL HEADINGS AND STANDARD DEVIATION INDICATED FOR GREAT CIRCLE AIR ROUTES.

--POSITIVE NUMERICAL HEADINGS AND STANDARD DEVIATION INDICATED FOR GREAT CIRCLE AIR ROUTES.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUILYALENT HEADWIND IN KNOTS												STANDARD DEVIATION			
	DIRECTION												RETURN			
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
PANAMA AFB	TO															
5000	4	2	2	0	2	4	0									
10000	0	0	1	1	0	7	0									
10000	-4	-4	1	1	-1	-12	-14									
PANAMA AFB	TO															
5000	6	4	3	3	1	-2	-4									
10000	0	0	4	5	6	-1	-3									
10000	13	7	5	11	0	-1	-3									
PANAMA AFB	TO															
5000	-1	-1	0	0	-1	-7	-9									
10000	-6	-4	-1	-1	-3	-11	-13									
10000	-11	-11	-3	-5	-5	-19	-21									
PANAMA AFB	TO															
5000	-1	2	14	1	3	-3	-4									
10000	0	1	6	5	2	-2	-3									
10000	-7	-3	-3	-6	-4	-10	-11									
PANAMA AFB	TO															
5000	1	4	9	2	2	-1	-2									
10000	4	5	5	2	4	0	-1									
10000	9	4	1	2	3	-1	-2									
PANAMA AFB	TO															
5000	4	1	2	-2	1	-3	-5									
10000	3	2	3	2	2	-2	-4									
10000	-5	-2	-4	-9	-6	-10	-12									
PANAMA AFB	TO															
5000	1	3	10	-2	2	-2	-1									
10000	4	5	6	3	4	0	0									
10000	6	3	-1	0	1	-3	-4									
PANAMA AFB	TO															
5000	14	7	3	7	7	3	0									
10000	27	17	4	19	19	6	4									
10000	43	31	12	27	27	15	12									
PANAMA AFB	TO															
5000	-1	-3	-2	2	-2	-7	-8									
10000	-1	-2	-2	2	-1	-5	-7									
10000	-4	-4	-4	-1	-6	-11	-12									

ONE-HALF DEGREE CORRECTIONS ARE 100-FT. AIRSPEED.
 ONE-DEGREE CORRECTIONS ARE 200-FT. AIRSPEED.
 TWO-DEGREE CORRECTIONS ARE 400-FT. AIRSPEED.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWIND IN D.S. RETURN														STANDARD DEVIATION			
	DIRECT				EQUIVALENT HEADWIND IN D.S. RETURN										STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT	00450	A75	A85	JAN	APR	JUL	OCT
PEIJING																		
5000	8	4	0	0	SHANGHAI	4	-1	-3	-8	-4	0	-6	-5	-12	-13	8	10	559 N.M.I.
10000	17	9	2	12	10	1	0	0	-20	-11	-3	-13	-12	-21	-23	11	10	10 8
15000	20	16	2	15	12	3	0	0	-33	-23	-4	-10	-19	-31	-34	15	14	11 11 12
PEIJING																		
5000	3	1	-2	4	1	-4	-5	-5	-4	-1	1	-4	-3	-8	-9	7	9	911 N.M.I.
10000	11	4	0	8	5	-1	-3	-3	-15	-7	0	-9	-8	-16	-18	10	9	9 10 10
15000	8	10	-1	0	5	-2	-4	-4	-25	-10	0	-11	-13	-24	-27	13	12	10 11
PEIJING																		
5000	14	7	3	7	7	1	0	0	-15	-7	-3	-8	-9	-15	-17	8	9	1134 N.M.I.
10000	28	19	6	16	16	6	6	6	-29	-19	-7	-17	-18	-27	-29	11	10	9 8 8
15000	45	33	13	29	29	17	14	14	-47	-35	-14	-31	-32	-44	-47	15	14	11 12
PITTSBURGH																		
5000	-12	-7	-6	-9	BEIJING	-9	-16	-10	11	6	6	6	7	0	-1	11	11	1101 N.M.I.
10000	-23	-14	-14	-16	-17	-25	-27	-27	21	12	14	14	15	7	5	11	12	9 11
15000	-37	-24	-22	-27	-27	-30	-41	-41	31	20	20	23	23	12	10	17	16	11 16
PITTSBURGH																		
5000	-15	-10	-7	-9	SCOTT AFB	-10	-19	-21	14	9	7	9	9	1	0	14	13	467 N.M.I.
10000	-29	-20	-13	-14	-19	-29	-32	-32	27	19	12	13	17	7	5	15	15	9 11
15000	-49	-31	-19	-30	-31	-47	-52	-52	44	27	10	26	26	13	10	22	22	11 14
PITTSBURGH																		
5000	-11	-8	-6	-6	SELFIDGE AFB	-8	-17	-19	9	7	6	5	6	-2	-4	15	15	172 N.M.I.
10000	-23	-14	-12	-10	-15	-26	-29	-29	10	13	10	6	12	1	0	16	17	10 12
15000	-40	-27	-17	-23	-26	-42	-46	-46	25	20	14	14	17	3	0	24	24	12 15
PITTSBURGH																		
5000	-1	0	0	-1	SMAN AFB	-1	-9	-11	0	-1	0	0	-1	-8	-10	13	13	391 N.M.I.
10000	-5	-3	0	-2	-3	-12	-14	-14	-3	-1	0	1	-1	-10	-12	15	15	9 12
15000	-17	-4	-1	-9	-7	-21	-24	-24	-5	-7	0	0	-3	-15	-19	21	21	10 14
PITTSBURGH																		
5000	14	9	8	10	ESTOVER AFB	10	1	0	-16	-11	-8	-10	-11	-20	-23	15	14	361 N.M.I.
10000	20	15	15	16	16	9	6	6	-31	-21	-15	-16	-20	-31	-34	16	16	10 12
15000	44	26	21	20	20	14	11	11	-50	-32	-22	-32	-33	-49	-54	23	23	11 14
PITTSBURGH																		
5000	-9	-7	-5	-4	WRIGHTSMITH	-7	-15	-17	6	5	4	3	4	-4	-6	15	14	276 N.M.I.
10000	-10	-12	-10	-8	-12	-23	-25	-25	11	9	6	6	6	-1	-3	16	16	10 12
15000	-32	-22	-19	-10	-21	-36	-40	-40	15	14	11	9	12	-1	-4	23	23	14 23

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.

00450—QUARTER ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

FOUR VALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEADING IN FEET		EQUIVALENT HEADWINDS												STANDARD DEVIATION			
		DIRECT						RETURN									
		JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT
PITTSBURGH	TO																
	SCOD	-12	-7	-3	-8	-14	-16	11	6	5	8	7	1	0	9	9	7
	LOCOO	-23	-13	-12	-15	-23	-24	21	12	12	14	14	8	6	9	9	7
	18000	-37	-24	-22	-28	-38	-40	32	21	21	25	24	15	13	15	14	10
PITTSBURGH	TO																
	SCOD	-7	-4	-4	-9	-13	-14	6	3	4	7	5	-1	-2	9	9	8
	LOCOO	-14	-10	-12	-13	-19	-21	14	3	11	12	11	5	3	9	9	8
	18000	-27	-18	-18	-21	-30	-32	20	14	15	16	16	8	6	13	13	9
PITTSBURGH	TO																
	SCOD	-2	0	-5	-3	-7	-7	2	1	6	3	3	0	-1	6	5	5
	LOCOO	2	2	6	2	3	3	-2	-2	-7	-2	-4	-8	-9	6	5	5
	18000	0	5	7	0	2	-2	-1	-5	-7	0	-3	-8	-10	7	6	7
PITTSBURGH	TO																
	SCOD	-4	0	4	6	1	-3	5	0	-4	-6	-2	-7	-8	5	6	5
	LOCOO	1	0	4	5	2	-1	-1	0	-4	-5	-3	-7	-8	6	6	6
	18000	4	0	3	3	2	-3	-4	0	-3	-3	-3	-8	-9	8	7	9
PITTSBURGH	TO																
	SCOD	1	0	0	5	1	-4	-2	0	0	-6	-2	-8	-10	9	8	7
	LOCOO	10	5	6	8	7	2	-11	-5	-7	-9	-8	-14	-15	8	7	7
	18000	16	8	9	12	11	3	-19	-10	-10	-14	-13	-21	-23	12	11	9
PITTSBURGH	TO																
	SCOD	-1	-1	-6	-2	-9	-11	0	1	6	1	2	-4	-6	11	9	8
	LOCOO	-6	-3	-7	-6	-13	-15	4	2	7	5	4	-2	-4	12	10	9
	18000	-11	-8	-8	-10	-19	-22	7	5	6	6	6	-3	-6	16	14	13
PITTSBURGH	TO																
	SCOD	-2	-2	2	-2	-7	-8	1	2	-2	1	0	-5	-6	9	8	8
	LOCOO	-1	1	3	1	0	-4	0	-2	-4	-1	-2	-8	-9	9	8	8
	18000	-2	2	5	3	2	-6	0	-4	-7	-4	-4	-12	-14	13	12	11
PITTSBURGH	TO																
	SCOD	-3	-3	-2	-1	-8	-9	3	2	2	0	1	-3	-4	8	7	6
	LOCOO	3	0	1	-2	-5	-7	-5	0	-2	1	-2	-7	-9	10	8	7
	18000	8	0	3	2	-5	-7	-14	-3	-5	-6	-7	-16	-18	14	13	10
PITTSBURGH	TO																
	SCOD	7	4	6	5	3	3	0	0	2	-4	0	-7	-9	10	9	9
	LOCOO	14	8	10	10	10	2	-7	-4	-11	-11	-12	-20	-22	14	12	10
	18000																

HEADWINDS—COMPUTED FOR A 120-KT AIRSPEED.
 00A—00A00'S ANNUAL FOUR VALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
 MINUS SIGN OPPOSITE HEADWINDS.

FOUR VALUENT HEADINGS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

WEIGHT IN PFBT	EQUIVALENT HEADWINDS										RETURN				STANDARD DEVIATION			
	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT	00ASO	A75	A85	JAN	APR	JUL	OCT
PUSAN EAST	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-3	-3	-3	-3	-3	-3	-3	3	3	3	3	3	3	3	3	3	3	3
10000	-11	-9	-6	-3	-3	-3	-3	8	8	5	2	5	5	2	5	5	0	0
15000	-24	-14	-4	-7	-12	-20	-22	15	9	3	5	7	1	0	7	1	0	0
PUSAN EAST	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-8	-8	-8	-8	-8	-8	-8	7	5	5	0	4	2	-4	4	-2	-4	9
10000	-23	-16	-6	-13	-14	-23	-26	19	15	6	8	11	3	1	11	3	1	12
15000	-43	-29	-12	-19	-25	-38	-42	34	23	11	16	20	9	7	20	9	7	13
PUSAN EAST	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	-3	-3	-3	-3	-3	-3	-3	3	3	3	3	3	3	3	3	3	3	3
10000	-14	-13	-3	-3	-10	-17	-19	8	11	5	4	7	0	-2	7	0	-2	8
15000	-32	-19	-8	-4	-16	-27	-31	16	10	8	6	9	1	0	9	1	0	11
PUSAN EAST	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	14	7	4	7	7	0	-1	-14	-7	-3	-7	-8	-16	-10	-8	-16	-10	11
10000	31	21	8	17	16	8	6	-32	-22	-8	-18	-14	-22	-33	-20	-31	-33	13
15000	48	37	14	32	32	18	15	-52	-39	-15	-34	-24	-34	-53	-35	-44	-53	18
PRIMA	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	9	3	3	7	5	-1	-3	-10	-6	-3	-8	-7	-15	-16	-7	-15	-16	11
10000	16	10	9	12	11	3	1	-19	-11	-10	-14	-14	-22	-24	-14	-22	-24	12
15000	23	15	13	19	16	6	4	-31	-20	-16	-24	-22	-34	-37	-22	-34	-37	18
PRIMA	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	11	4	6	9	7	0	-1	-12	-6	-6	-10	-9	-16	-18	-9	-16	-18	12
10000	21	12	14	15	15	7	5	-22	-13	-15	-17	-17	-25	-27	-17	-25	-27	11
15000	31	20	21	24	23	12	10	-36	-23	-23	-27	-27	-39	-42	-27	-39	-42	18
PRIMA	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	9	6	4	6	6	0	-1	-11	-7	-4	-7	-8	-14	-16	-8	-14	-16	10
10000	18	11	9	10	11	4	3	-21	-13	-10	-12	-14	-22	-23	-14	-22	-23	10
15000	24	18	14	18	17	8	6	-34	-23	-16	-24	-24	-35	-38	-24	-35	-38	16
PRIMA	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	8	2	2	2	0	-4	-6	0	-1	-2	-3	-2	-7	-9	-2	-7	-9	8
10000	-4	0	0	-1	-2	-7	-8	3	-1	3	0	0	-5	-7	0	-5	-7	8
15000	-3	0	0	-1	-1	-9	-11	0	-3	-2	-2	-2	-10	-12	-2	-10	-12	12
PRIMA	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
5000	11	5	7	9	7	1	0	-12	-6	-8	-10	-9	-16	-18	-9	-16	-18	11
10000	21	13	15	16	16	9	7	-23	-14	-15	-17	-17	-25	-27	-17	-25	-27	11
15000	31	21	23	24	24	14	12	-37	-24	-24	-28	-28	-39	-41	-28	-39	-41	16

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

00A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

FOR VALVE HEADS AND STANDARD DEVIATION IN CYTS FOR GREY CASTLE AIR POUTES

HEIGHT IN FEET	MONTHLY MEAN WIND VELOCITY												STANDARD DEVIATION												
	DAILY												MONTHLY												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	

SOULS FOR SALE: 4015 SOUTH
 14TH AVE. APT. 104, DENVER, CO. 80202
 3-5410-2000 120-43-5510

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS										STANDARD DEVIATION									
	DIRECT					RETURN					JAN APR JUL OCT					JAN APR JUL OCT				
	JAN	APR	JUL	OCT	**450	A75	A85	JAN	APR	JUL	OCT	**450	A75	A85		JAN	APR	JUL	OCT	
SCOTT AFB																				
5000	8	4	5	6	5	-2	-4	-10	-5	-5	-7	-7	-15	-18	14	13	10	12	14	14
10000	14	9	7	9	9	0	-2	-19	-12	-9	-11	-13	-23	-25	15	15	11	14	16	16
18000	20	12	11	12	13	0	-2	-34	-20	-14	-20	-21	-36	-40	22	21	18	21	24	24
SCOTT AFB																				
5000	-9	-6	-4	-7	-7	-13	-14	8	6	4	6	5	0	-1	9	9	7	8	9	9
10000	-21	-12	-9	-14	-14	-21	-23	20	11	9	13	12	6	4	10	10	8	9	9	9
18000	-35	-23	-19	-27	-26	-36	-39	30	19	16	23	21	12	10	16	15	10	14	16	16
SCOTT AFB																				
5000	-7	-3	-2	-9	-5	-12	-13	5	2	2	6	3	-2	-3	9	9	8	9	9	9
10000	-15	-8	-9	-12	-11	-18	-19	13	7	6	11	9	3	2	9	9	8	9	9	9
18000	-25	-15	-13	-20	-18	-27	-30	17	11	10	15	12	4	2	13	13	9	13	16	16
SELF RIDGE AFB																				
5000	1	2	2	0	1	-6	-8	-4	-3	-2	-1	-3	-11	-12	13	12	9	11	13	13
10000	1	2	2	0	1	-7	-9	-10	-7	-3	-2	-6	-15	-17	14	14	10	13	16	16
18000	-4	3	2	-2	0	-12	-16	-18	-15	-5	-7	-11	-24	-28	21	21	18	22	26	26
SELF RIDGE AFB																				
5000	15	9	9	10	10	2	0	-16	-10	-9	-10	-12	-20	-22	14	14	10	12	14	14
10000	28	19	16	16	19	9	7	-30	-20	-16	-17	-21	-31	-34	16	16	11	14	16	16
18000	44	28	23	28	29	15	12	-48	-32	-24	-32	-33	-49	-53	23	23	18	22	26	26
SELF RIDGE AFB																				
5000	-11	-6	-5	-8	-8	-14	-15	11	6	5	8	7	1	0	9	9	7	9	9	9
10000	-22	-13	-13	-16	-16	-23	-25	21	12	12	15	14	8	6	10	10	8	9	9	9
18000	-35	-23	-23	-28	-27	-37	-39	31	20	21	25	23	14	12	15	14	10	14	16	16
SELF RIDGE AFB																				
5000	-7	-3	-4	-9	-6	-12	-14	6	3	3	8	4	-1	-2	9	9	8	9	9	9
10000	-16	-9	-12	-14	-13	-19	-21	14	8	11	12	11	5	3	9	9	8	9	9	9
18000	-26	-17	-18	-21	-21	-29	-32	20	14	15	17	16	8	6	13	13	10	14	16	16
SHANGHAI																				
5000	-1	-2	-5	3	-1	-8	-10	1	2	2	-3	0	-6	-7	9	9	8	9	9	9
10000	0	-3	-3	1	-1	-9	-11	-5	0	2	-2	-1	-9	-11	11	11	12	14	16	16
18000	-9	0	-6	0	-4	-13	-15	-9	-8	5	-2	-3	-13	-16	14	14	11	14	16	16
SHANGHAI																				
5000	10	6	4	3	5	0	-2	-11	-7	-4	-3	-7	-13	-15	9	9	8	9	9	9
10000	27	19	7	13	16	7	5	-29	-20	-7	-14	-10	-27	-29	11	11	10	12	14	14
18000	44	33	13	24	27	16	13	-50	-36	-13	-27	-31	-45	-48	13	13	11	14	16	16

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

**A--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

FLIGHT IN FEET	EQUIVALENT HEADWINDS IN KNOTS										STANDARD DEVIATION	
	JAN	APR	JUL	OCT	NOV	DEC	JAN	APR	JUL	OCT	NOV	DEC
SHAW AFB												
5000	8	5	4	4	5	5	-10	-7	-4	-5	-7	-15
10000	14	12	7	8	9	1	-21	-16	-3	-9	-13	-23
18000	26	13	9	17	15	3	-60	-24	-12	-23	-23	-30
SHAW AFB												
5000	-4	-4	-2	-1	-3	-11	1	2	2	0	1	-6
10000	-10	-7	-3	-2	-6	-15	2	2	2	0	1	-7
18000	-18	-15	-6	-8	-11	-24	-3	3	2	-1	0	-12
SHAW AFB												
5000	-10	-7	-4	-4	-7	-12	9	6	4	6	6	1
10000	-22	-14	-9	-12	-14	-21	20	14	8	11	12	6
18000	-36	-25	-17	-26	-25	-36	30	21	16	22	21	13
SHAW AFB												
5000	-11	-10	-7	-13	-11	-17	9	8	6	11	8	1
10000	-21	-15	-9	-20	-14	-24	17	12	8	18	13	6
18000	-33	-26	-12	-32	-26	-37	23	19	9	25	18	8
SINGAPORE												
5000	1	1	9	0	2	-1	-1	-1	-8	0	-3	-7
10000	2	4	6	2	3	0	-3	-4	-6	-2	-4	-8
18000	5	2	-1	0	1	-3	-7	-3	0	0	-3	-8
SUVA, FIJI												
5000	0	-1	-3	0	-1	-7	0	1	2	0	0	-5
10000	-1	-2	-4	-2	-3	-9	0	1	0	0	0	-6
18000	-4	-5	-9	-7	-7	-15	1	0	0	0	0	-7
TAIPEI												
5000	6	6	5	0	4	-1	-7	-7	-5	0	-5	-11
10000	20	18	6	10	13	5	-24	-19	-7	-11	-15	-24
18000	36	25	10	16	20	10	-46	-31	-11	-20	-26	-40
TEHRAN												
5000	4	6	5	2	4	-1	-4	-6	-5	-1	-4	-10
10000	9	8	4	4	6	0	-10	-9	-4	-6	-8	-14
18000	25	22	11	12	16	7	-31	-26	-12	-14	-20	-31
THULE												
5000	1	0	-1	-1	-1	-6	-2	0	0	0	0	-5
10000	0	0	0	-1	-1	-7	-1	0	0	0	-1	-7
18000	-6	-2	0	-4	-4	-11	0	0	0	0	-1	-9

HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

*A--DENOTES ACTUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITY.
*PLUS SIGN DENOTES HEADWIND.

EQUIVALENT HEADWINDS AND STANDARD DEVIATION IN KNOTS FOR GREAT CIRCLE AIR ROUTES

HEIGHT IN FEET	EQUIVALENT HEADWINDS												STANDARD DEVIATION	
	DIRECT						RETURN							
	JAN	APR	JUL	OCT	MAY	SEP	JAN	APR	JUL	OCT	MAY	SEP		
THULE	YELLOWKNIFE												1228 Kts.	
5000	0	-1	-2	-4	-2	-8	-10	0	1	2	3	1	-5	-6
10000	2	-2	0	-1	-1	-6	-8	-3	2	0	0	0	-6	-8
18000	1	-4	-2	-3	-2	-10	-12	-4	2	0	0	0	-8	-10
TOKYO	WAKE ISLAND												1729 Kts.	
5000	3	-1	-3	-3	-2	-7	-8	-5	0	2	2	0	-5	-7
10000	17	8	0	1	5	0	-2	-21	-11	0	-3	-8	-17	-19
18000	25	24	3	9	14	4	2	-42	-30	-5	-15	-22	-37	-40
VANIMO	WAKE ISLAND												1979 Kts.	
5000	-9	-7	-4	-1	-6	-10	-11	8	6	4	1	4	1	0
10000	-5	-4	-4	-6	-5	-8	-9	5	4	4	6	4	1	0
18000	-8	-4	-5	-5	-6	-10	-11	6	4	5	5	4	1	0
WESTOVER AFB	WURTSMITH												1902 Kts.	
5000	-16	-9	-9	-10	-11	-20	-22	14	8	9	9	9	1	0
10000	-28	-19	-16	-18	-20	-30	-33	26	17	16	16	16	0	0
18000	-45	-31	-24	-31	-32	-47	-51	39	26	23	26	27	14	11
WESTOVER AFB	YELLOWKNIFE												1900 Kts.	
5000	-8	-4	-5	-9	-7	-13	-14	7	3	5	8	5	0	-1
10000	-16	-9	-13	-14	-14	-20	-21	14	8	12	12	11	5	0
18000	-26	-18	-19	-21	-21	-29	-31	19	14	17	16	16	0	0
WURTSMITH	YAKIMA												1923 Kts.	
5000	-11	-6	-5	-9	-8	-14	-16	11	5	5	8	7	1	0
10000	-21	-12	-13	-16	-16	-23	-24	20	11	13	15	14	0	0
18000	-34	-22	-23	-28	-27	-36	-39	30	19	22	24	23	14	12
WURTSMITH	YELLOWKNIFE												1921 Kts.	
5000	-7	-3	-4	-9	-6	-13	-14	6	3	3	8	4	-1	-3
10000	-16	-9	-12	-14	-13	-19	-21	14	8	11	13	11	5	3
18000	-26	-17	-18	-21	-21	-29	-32	21	14	16	17	16	0	0
YAKIMA	YELLOWKNIFE												976 Kts.	
5000	5	3	1	3	2	-3	-4	-5	-4	-1	-4	-4	-10	-11
10000	-1	1	0	2	0	-6	-7	-1	-2	0	-4	-2	-9	-10
18000	-5	0	0	0	-1	-11	-14	-2	-4	-3	-5	-4	-14	-16

HEADWINDS--COMPUTED FOR A 120-KT. AIRSPEED

*HEADWINDS--COMPUTED FOR A 120-KT AIRSPEED.

***--DENOTES ANNUAL EQUIVALENT HEADWINDS FOR INDICATED PER CENT RELIABILITIES.
MINUS SIGN DENOTES HEADWINDS.

	LATITUDE DEG MIN	LONGITUDE DEG MIN	ELEVATION FT
ABADAN	30 22N	48 15E	10
ADAK NS	51 53N	176 39W	17
ADELAIDE	34 57S	138 32E	12
ADEN	12 50N	45 2E	10
ALAMEDA NAS	37 47N	122 3W	29
ALERT	83 29N	62 17W	190
ANDERSON AFB	13 35N	144 55E	580
ANDREWS AFB	38 49N	76 51W	353
ATTU	52 50N	173 11E	40
BAGHDAD	33 19N	44 22E	110
BANGKOK	13 55N	100 37E	10
BOISE	43 34N	116 14W	2858
BOMBAY	19 5N	72 52E	30
BRISBANE	27 38S	152 43E	86
CALCUTTA	22 39N	88 27E	10
CANNON AFB	34 23N	103 19W	4301
CAKSWELL AFB	32 46N	97 27W	617
CHERRY PT MCAS	34 54N	76 53W	29
CHICAGO	41 59N	87 54W	667
CHITOSE AB	42 48N	141 39E	92
CHURCHILL	58 45N	94 4W	96
CLARK AFB	15 11N	120 33E	475
COLOMBO	6 54N	79 52E	24
COOKTOWN	15 28S	145 14E	10
CORPUS CHRISTI	27 42N	97 17W	20
DA NANG	16 2N	108 12E	30
DARWIN	12 28S	130 55E	20
DAVAO	7 4N	125 36E	19
DHAHRAN	26 17N	50 10E	78
DIEGO GARCIA	7 21S	72 29E	4
DJAKARTA	6 9S	106 51E	10
DOVER AFB	39 8N	75 28W	27
DUTCH HARBOR	53 54N	166 32W	12
EDMONTON	53 34N	113 31W	2214
EGLIN AFB	30 29N	86 31W	5
EIELSON AFB	64 39N	147 4W	544
ELLINGTON AFB	29 36N	95 10W	3
ELLSWORTH AFB	44 49N	103 6W	3276
ELMENDORF AFB	61 15N	149 48W	258
EL TORO MCAS	33 40N	117 44W	380
ENGLAND AFB	31 19N	92 33W	89
ENIWETOK ATOLL	11 21N	162 15E	21
FORT BENNING	32 32N	84 54W	252
FORT BLISS	31 48N	106 23W	1205
FORT BRAGG/POPE	35 8N	78 56W	242
FORT CAMPBELL	36 40N	87 30W	559

THE BOEING VERTOL COMPANY

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	LATITUDE DEG MIN	LONGITUDE DEG MIN	ELEVATION FT
FORT CARSON	38 41N	104 46W	5835
FORT EUSTIS	38 8N	76 37W	10
FORT HOOD	31 8N	97 34W	33
FORT HUACHUCA	31 35N	110 20W	1422
FORT KNOX	37 54N	85 58W	764
FORT LEAVENWORTH	39 22N	94 55W	786
FORT LEWIS	47 5N	122 35W	301
FORT ORD	36 41N	121 46W	134
FORT RUCKER	31 14N	85 26W	325
FORT SILL	34 39N	98 24W	119
FORT WOLTERS	32 47N	98 4W	964
FRUBISHER	63 45N	68 38W	96
GEN MITCHELL	42 47N	87 54W	698
HANOI	21 1N	105 51E	53
HICKAM AFB	21 20N	157 55W	14
HILL AFB	41 7N	111 58W	4788
HOMESTEAD AFB	25 28N	80 24W	17
HONG KONG	22 20N	114 12E	13
HUNTER AAF	32 1N	81 8W	70
HUNTSVILLE	34 39N	86 47W	629
IWAKUNI	34 9N	132 14E	10
IWO JIMA AB	24 47N	141 19E	350
JACKSONVILLE	30 25N	81 39W	24
JOHNSTON ISLAND	16 44N	169 31W	7
JUNEAU	58 27N	134 34W	1676
KADENA AB	26 21N	127 46E	142
KAKACHI	24 54N	67 9E	80
KEY WEST	24 33N	81 48W	9
KIMPO AB	37 33N	126 48E	60
KODIAK	57 45N	152 31W	77
KWAJALEIN NS	8 44N	167 43E	24
LAHORE	31 27N	74 26E	702
LARSON AFB	47 12N	119 19W	1186
LITTLE ROCK	34 55N	92 9W	311
LOCKBOURNE	39 39N	82 56W	744
LUKING AFB	46 57N	67 53W	746
LUKE AFB	33 30N	112 22W	1093
MANDALAY	21 56N	96 5E	2541
MAURITIUS ISLAND	20 26S	57 41E	165
MCGUIRE AFB	40 2N	74 36W	127
MEDAN	3 34N	98 40E	102
MELBOURNE	37 52S	144 45E	46
MEMPHIS	35 3N	89 59W	284
MEXICO CITY	19 26N	99 8W	7382

THE BOEING VERTOL COMPANY

D210-10600-1

	LATITUDE DEG MIN	LONGITUDE DEG MIN	ELEVATION FT
MIDWAY ISLAND	28 12N	177 23W	10
MINN-ST PAUL	44 53N	93 13W	838
MINOT AFB	48 16N	101 17W	1723
MISAWA AB	40 42N	141 23E	110
NELLIS AFB	36 15N	115 2W	1881
NEW CUMBERLAND	40 13N	76 51W	106
NEW DELHI	28 34N	77 7E	750
NEW ORLEANS	30 1N	90 4W	13
NIAGARA FALLS	43 6N	78 57W	48
NOUMEA	22 16S	166 57E	0
OXNARD AFB	34 15N	119 5W	96
PAGO PAGO	14 20S	170 42W	9
PAPEETE	17 33S	149 37W	7
PATRICK AFB	28 15N	80 36W	9
PENANG	5 18N	100 16E	16
PEIPING	39 36N	116 24E	0
PERTH	31 56S	115 58E	51
PITTSBURGH	40 30N	80 13W	1151
PORT MORESBY	9 30S	147 7E	148
PRUDHOE BAY	70 15N	148 20W	46
PUSAN EAST	35 10N	129 8E	6
REGINA	50 26N	104 40W	1900
SAIGON	10 49N	106 40E	30
SCOTT AFB	38 33N	89 59W	444
SELFRIIDGE AFB	42 36N	82 50W	610
SHANGHAI	31 15N	121 29E	0
SHAW AFB	33 59N	80 29W	250
SHEMYA	52 43N	174 7E	90
SINGAPORE	1 21N	103 54E	33
SUVA, FIJI	16 48S	179 20E	10
TAIPEI	25 2N	121 31E	26
TEHRAN	35 11N	51 20E	3960
THULE	76 32N	68 45W	251
TOKYO	35 33N	139 46E	10
VANIMO	2 41S	141 18E	3
WAKE ISLAND	19 17N	166 39E	11
WELLINGTON	41 17S	174 46E	415
WESTOVER AFB	42 12N	72 32W	244
WUKTSMITH	44 28N	83 22W	618
YAKIMA	46 34N	120 32W	1061
YELLOWKNIFE	62 28N	114 27W	676

THE BOEING VERTOL COMPANY

0210-10600-1

	LATITUDE DEG MIN	LONGITUDE DEG MIN	ELEVATION FT
ZAHEDAN	29 27N	60 54E	4716

ABADAN		ALAMEDA NAS (CONT.)		ANDERSON AFB		ANDREWS AFB (CONT.)	
ADEN - - - - -	17	ELLINGTON AFB - - - - -	22	CHITOSE AB - - - - -	27	KEY WEST - - - - -	33
BAGHDAD - - - - -	17	ELLSWORTH AFB - - - - -	22	CLARK AFB - - - - -	27	LARSON AFB - - - - -	33
BOMBAY - - - - -	17	ELMENDORF AFB - - - - -	22	COOKTOWN - - - - -	27	LITTLE ROCK - - - - -	33
DMAMRAN - - - - -	17	EL TORO MCAS - - - - -	22	DARWIN - - - - -	28	LOCKHOURNE - - - - -	33
KARACHI - - - - -	17	ENGLAND AFB - - - - -	22	DAVAT - - - - -	28	LORING AFB - - - - -	33
LAHORE - - - - -	17	FORT BENNING - - - - -	22	ENIWETOK ATOLL - - - - -	28	LUKE AFB - - - - -	34
NEW DELHI - - - - -	17	FORT BLISS - - - - -	22	HONG KONG - - - - -	28	MEMPHIS - - - - -	34
TEHRAN - - - - -	17	FORT CAMPBELL - - - - -	22	INAKUNI - - - - -	28	MEXICO CITY - - - - -	34
ZAHEDAN - - - - -	17	FORT CARSON - - - - -	22	JOH JIMA AB - - - - -	28	MINOT AFB - - - - -	34
ADAK NS		FORT HUND - - - - -	23	KADENA AB - - - - -	28	MINN-ST PAUL - - - - -	34
ATTU - - - - -	18	FORT HUACHUCA - - - - -	23	KEMPO AB - - - - -	28	NELLIS AFB - - - - -	34
CHITOSE AB - - - - -	18	FORT KNOX - - - - -	23	KWJALEIN NS - - - - -	28	NEW ORLEANS - - - - -	34
DUTCH HARBOR - - - - -	18	FORT LEAVENWORTH - - - - -	23	MISAWA AB - - - - -	29	NIAGARA FALLS - - - - -	34
EIELSON AFB - - - - -	18	FORT LEWIS - - - - -	23	PORT MORESBY - - - - -	29	PATRICK AFB - - - - -	34
ELMENDORF AFB - - - - -	18	FORT RUCKER - - - - -	23	PUSAN EAST - - - - -	29	PITTSBURGH - - - - -	35
JUNEAU - - - - -	18	FORT SILL - - - - -	23	SHANGHAI - - - - -	29	REGINA - - - - -	35
KODIAK - - - - -	18	FORT WOLTERS - - - - -	23	TAIPEI - - - - -	29	SCOTT AFB - - - - -	35
MIDWAY ISLAND - - - - -	18	GEN MITCHELL - - - - -	23	TOKYO - - - - -	29	SELEBRIDGE AFB - - - - -	35
MISAWA AB - - - - -	19	HILL AFB - - - - -	24	YAKIMA - - - - -	29	SHAW AFB - - - - -	35
PRUDHOE BAY - - - - -	19	HUNTSVILLE - - - - -	24	WAKE ISLAND - - - - -	29	WESTOVER AFB - - - - -	35
SHEMYA - - - - -	19	JUNEAU - - - - -	24	ANDREWS AFB		WURTSMITH - - - - -	35
ADELPHI		KODIAK - - - - -	24	ADISE - - - - -	29	YAKIMA - - - - -	35
BRISBANE - - - - -	19	LARSON AFB - - - - -	24	CANNON AFB - - - - -	30	YELLOWKNIFE - - - - -	35
COOKTOWN - - - - -	19	LITTLE ROCK - - - - -	24	CARSWELL AFB - - - - -	30	ATTU	
DARWIN - - - - -	19	LOCKHOURNE - - - - -	24	CHERRY PT MCAS - - - - -	30	ADAK NS - - - - -	18
ELMENDORF AFB - - - - -	19	LUKE AFB - - - - -	24	CHICAGO - - - - -	30	CHITOSE AB - - - - -	36
ELMENDORF AFB - - - - -	19	MEMPHIS - - - - -	24	CHURCHILL - - - - -	30	DUTCH HARBOR - - - - -	36
JUNEAU - - - - -	19	MEXICO CITY - - - - -	25	CORPUS CHRISTI - - - - -	30	EIELSON AFB - - - - -	36
PERTH - - - - -	19	MINOT AFB - - - - -	25	EDMONTON - - - - -	30	ELMENDORF AFB - - - - -	36
PORT MORESBY - - - - -	19	MINN-ST PAUL - - - - -	25	ESLIN AFB - - - - -	30	JUNEAU - - - - -	36
VANINO - - - - -	20	NELLIS AFB - - - - -	25	ELLINGTON AFB - - - - -	30	KODIAK - - - - -	36
WELLINGTON - - - - -	20	NEW ORLEANS - - - - -	25	ELLSWORTH AFB - - - - -	31	MIDWAY ISLAND - - - - -	36
ADEN		NIAGARA FALLS - - - - -	25	EL TORO MCAS - - - - -	31	MISAWA AB - - - - -	36
ABADAN - - - - -	17	OXNARD AFB - - - - -	25	ENGLAND AFB - - - - -	31	PRUDHOE BAY - - - - -	36
BAGHDAD - - - - -	20	PITTSBURGH - - - - -	25	FORT BENNING - - - - -	31	TOKYO - - - - -	37
BOMBAY - - - - -	20	REGINA - - - - -	25	FORT BLISS - - - - -	31	BAGHDAD	
DMAMRAN - - - - -	20	SCOTT AFB - - - - -	26	FORT BRAGG/PDPE - - - - -	31	ABADAN - - - - -	17
KARACHI - - - - -	20	SELEBRIDGE AFB - - - - -	26	FORT CAMPBELL - - - - -	31	ADEN - - - - -	20
LAHORE - - - - -	20	WURTSMITH - - - - -	26	FORT CARSON - - - - -	31	BOMBAY - - - - -	37
TEHRAN - - - - -	20	YAKIMA - - - - -	26	FORT HUND - - - - -	31	DMAMRAN - - - - -	37
ZAHEDAN - - - - -	20	YELLOWKNIFE - - - - -	26	FORT HUACHUCA - - - - -	32	KARACHI - - - - -	37
ALAMEDA NAS		ALERT		FORT KNOX - - - - -	32	LAHORE - - - - -	37
ADISE - - - - -	21	CHURCHILL - - - - -	26	FORT LEAVENWORTH - - - - -	32	NEW DELHI - - - - -	37
CANNON AFB - - - - -	21	EDMONTON - - - - -	26	FORT RUCKER - - - - -	32	TEHRAN - - - - -	37
CARSWELL AFB - - - - -	21	EIELSON AFB - - - - -	26	FORT SILL - - - - -	32	ZAHEDAN - - - - -	37
CHICAGO - - - - -	21	ELMENDORF AFB - - - - -	26	FORT WOLTERS - - - - -	32	BANGKOK	
CHURCHILL - - - - -	21	FRIDISHER - - - - -	27	FRIDISHER - - - - -	32	BOMBAY - - - - -	37
CORPUS CHRISTI - - - - -	21	JUNEAU - - - - -	27	GEN MITCHELL - - - - -	32	CALCUTTA - - - - -	38
EDMONTON - - - - -	21	KODIAK - - - - -	27	HILL AFB - - - - -	32	CLARK AFB - - - - -	38
ESLIN AFB - - - - -	21	PRUDHOE BAY - - - - -	27	HUNTER AAF - - - - -	33	COLIMBO - - - - -	38
EIELSON AFB - - - - -	21	THULE - - - - -	27	HUNTSVILLE - - - - -	33	DA NANG - - - - -	38
ALAMEDA NAS		YELLOWKNIFE - - - - -	27	JACKSONVILLE - - - - -	33		

BANGKOK (CONT.)		BOISE (CONT.)		BRISBANE (CONT.)		CANNON AFB (CONT.)	
DAYAO - - - - -	38	HUNTER AAF - - - - -	44	MELBOURNE - - - - -	49	FORT LEAVENWORTH - - -	54
DJAKARTA - - - - -	38	HUNTSVILLE - - - - -	44	NOUMFA - - - - -	49	FORT LEWIS - - - - -	54
MANOT - - - - -	38	JACKSONVILLE - - - -	44	PERTH - - - - -	49	FORT ORD - - - - -	54
HONG KONG - - - - -	38	JUNEAU - - - - -	44	PORT MORESBY - - - - -	49	FORT RUCKER - - - - -	54
KADENA AB - - - - -	38	KODIAK - - - - -	44	SUVA, FIJI - - - - -	49	FORT SILL - - - - -	54
KARACHI - - - - -	39	LARSON AFB - - - - -	44	VANIMO - - - - -	49	FORT WOLTERS - - - - -	54
KIMPO AB - - - - -	39	LITTLE ROCK - - - - -	44	WELLINGTON - - - - -	49	GEN MITCHELL - - - - -	54
LAHORE - - - - -	39	LOCKBOURNE - - - - -	44			HILL AFB - - - - -	54
MANDALAY - - - - -	39	LUKE AFB - - - - -	44	CALCUTTA		HOMESTEAD AFB - - - - -	54
MEDAN - - - - -	39	MCGUIRE AFB - - - - -	45	BANGKOK - - - - -	38	HUNTER AAF - - - - -	55
NEW DELHI - - - - -	39	MEMPHIS - - - - -	45	ROMBAY - - - - -	47	HUNTSVILLE - - - - -	55
PEIPING - - - - -	39	MEXICO CITY - - - - -	45	CLARK AFB - - - - -	49	JACKSONVILLE - - - -	55
PENANG - - - - -	39	MINOT AFB - - - - -	45	COLOMBO - - - - -	49	JUNEAU - - - - -	55
PUSAN EAST - - - - -	39	MINN-ST PAUL - - - - -	45	DA NANG - - - - -	50	KEY WEST - - - - -	55
SAIGON - - - - -	40	NELLIS AFB - - - - -	45	MANOT - - - - -	50	LARSON AFB - - - - -	55
SHANGHAI - - - - -	40	NEW CUMBERLAND - - - -	45	HONG KONG - - - - -	50	LITTLE ROCK - - - - -	55
SINGAPORE - - - - -	40	NEW ORLEANS - - - - -	45	KARACHI - - - - -	50	LOCKBOURNE - - - - -	55
TAIPEI - - - - -	40	NIAGARA FALLS - - - - -	45	LAHORE - - - - -	50	LORING AFB - - - - -	55
		OXNARD AFB - - - - -	46	MANDALAY - - - - -	50	LUKE AFB - - - - -	56
		PATRICK AFB - - - - -	46	MEDAN - - - - -	50	MCGUIRE AFB - - - - -	56
		PITTSBURGH - - - - -	46	NEW DELHI - - - - -	50	MEMPHIS - - - - -	56
		PRUDHOE BAY - - - - -	46	PEIPING - - - - -	50	MEXICO CITY - - - - -	56
		REGINA - - - - -	46	PENANG - - - - -	51	MINOT AFB - - - - -	56
		SCOTT AFB - - - - -	46	SAIGON - - - - -	51	MINN-ST PAUL - - - - -	56
		SELFRIEDGE AFB - - - -	46	SHANGHAI - - - - -	51	NELLIS AFB - - - - -	56
		SHAW AFB - - - - -	46	SINGAPORE - - - - -	51	NEW CUMBERLAND - - - -	56
		WESTOVER AFB - - - - -	46	TAIPEI - - - - -	51	NEW ORLEANS - - - - -	56
		WURTSMITH - - - - -	47	ZAHEDAN - - - - -	51	NIAGARA FALLS - - - - -	57
		YAKIMA - - - - -	47			OXNARD AFB - - - - -	57
		YELLOWKNIFE - - - - -	47	CANNON AFB		PATRICK AFB - - - - -	57
				ALAMEDA NAS - - - - -	21	PITTSBURGH - - - - -	57
				ANDREWS AFB - - - - -	30	REGINA - - - - -	57
				BOISE - - - - -	40	SCOTT AFB - - - - -	57
				CARSWELL AFB - - - - -	51	SELFRIEDGE AFB - - - -	57
				CHERRY PT MCAS - - - - -	51	SHAW AFB - - - - -	57
				CHICAGO - - - - -	51	WESTOVER AFB - - - - -	57
				CHURCHILL - - - - -	52	WURTSMITH - - - - -	58
				CORPUS CHRISTI - - - - -	52	YAKIMA - - - - -	58
				DOVER AFB - - - - -	52	YELLOWKNIFE - - - - -	58
				EDMONTON - - - - -	52		
				EGLIN AFB - - - - -	52	CARSWELL AFB	
				ELLINGTON AFB - - - - -	52	ALAMEDA NAS - - - - -	21
				ELLSWORTH AFB - - - - -	52	ANDREWS AFB - - - - -	30
				EL TORO MCAS - - - - -	52	BOISE - - - - -	40
				ENGLAND AFB - - - - -	52	CANNON AFB - - - - -	51
				FORT BENNING - - - - -	53	CHERRY PT MCAS - - - -	58
				FORT BLISS - - - - -	53	CHICAGO - - - - -	58
				FORT BRAGG/POPE - - - -	53	CHURCHILL - - - - -	58
				FORT CAMPBELL - - - - -	53	CORPUS CHRISTI - - - -	58
				FORT CARSON - - - - -	53	DOVER AFB - - - - -	58
				FORT EUSTIS - - - - -	53	EDMONTON - - - - -	58
				FORT HOND - - - - -	53	EGLIN AFB - - - - -	59
				FORT HUACHUCA - - - - -	53	ELLINGTON AFB - - - - -	59
				FORT KNOX - - - - -	53	ELLSWORTH AFB - - - -	59

CARSWELL AFB (CONT.)	CHERRY PT MCAS (CONT.)	CHICAGO (CONT.)	CHICAGO (CONT.)
EL TORO MCAS - - - - 59	CORPUS CHRISTI - - - - 64	CARSWELL AFB - - - - 58	SHAW AFB - - - - - 75
ENGLAND AFB - - - - 59	DOVER AFB - - - - 64	CHERRY PT MCAS - - - - 64	WESTOVER AFB - - - - 75
FORT BENNING - - - - 59	EDMONTON - - - - 64	CHURCHILL - - - - 70	WURTSMITH - - - - 76
FORT BLISS - - - - 59	EGLIN AFB - - - - 65	CORPUS CHRISTI - - - - 70	YAKIMA - - - - 76
FORT BRAGG/POPE - - - 59	ELLINGTON AFB - - - - 65	DOVER AFB - - - - 70	YELLOWKNIFE - - - - 76
FORT CAMPBELL - - - - 59	ELLSWORTH AFB - - - - 65	EDMONTON - - - - 70	
FORT CARSON - - - - 60	ENGLAND AFB - - - - 65	EGLIN AFB - - - - 70	CHITOSE AB
FORT EUSTIS - - - - 60	FORT BENNING - - - - 65	ELLINGTON AFB - - - - 70	ADAK NS - - - - - 18
FORT HUACHUCA - - - - 60	FORT BLISS - - - - 65	ELLSWORTH AFB - - - - 70	ANDERSON AFB - - - - 27
FORT KNOX - - - - 60	FORT CAMPBELL - - - - 65	EL TORO MCAS - - - - 70	ATTU - - - - - 36
FORT LEAVENWORTH - - - 60	FORT CARSON - - - - 65	ENGLAND AFB - - - - 70	CLARK AFB - - - - 76
FORT LEWIS - - - - 60	FORT EUSTIS - - - - 65	FORT BENNING - - - - 71	HONG KONG - - - - 76
FORT ORD - - - - 60	FORT HOOD - - - - 66	FORT BLISS - - - - 71	IWAKUNI - - - - 76
FORT RUCKER - - - - 60	FORT HUACHUCA - - - - 66	FORT BRAGG/POPE - - - 71	IWO JIMA AB - - - - 76
GEN MITCHELL - - - - 60	FORT KNOX - - - - 66	FORT CAMPBELL - - - - 71	KADENA AFB - - - - 76
HILL AFB - - - - 61	FORT LEAVENWORTH - - - 66	FORT CARSON - - - - 71	KIMPO AB - - - - 76
HOMESTEAD AFB - - - - 61	FORT RUCKER - - - - 66	FORT EUSTIS - - - - 71	PEIPING - - - - 77
HUNTER AAF - - - - 61	FORT SILL - - - - 66	FORT HOOD - - - - 71	PUSAN EAST - - - - 77
HUNTSVILLE - - - - 61	FORT WOLTERS - - - - 66	FORT HUACHUCA - - - - 71	SHANGHAI - - - - 77
JACKSONVILLE - - - - 61	FROBISHER - - - - 66	FORT KNOX - - - - 71	SHEMYA - - - - 77
KEY WEST - - - - 61	GEN MITCHELL - - - - 66	FORT LEAVENWORTH - - - 72	TAIPEI - - - - 77
LARSON AFB - - - - 61	HILL AFB - - - - 67	FORT LEWIS - - - - 72	TOKYO - - - - 77
LITTLE ROCK - - - - 61	HOMESTEAD AFB - - - - 67	FORT ORD - - - - 72	WAKE ISLAND - - - - 77
LOCKBOURNE - - - - 61	HUNTER AAF - - - - 67	FORT RUCKER - - - - 72	
LORING AFB - - - - 62	HUNTSVILLE - - - - 67	FORT SILL - - - - 72	CHURCHILL
LUKE AFB - - - - 62	JACKSONVILLE - - - - 67	FORT WOLTERS - - - - 72	ALAMEDA NAS - - - - 21
MCGUIRE AFB - - - - 62	KEY WEST - - - - 67	FROBISHER - - - - 72	ALERT - - - - - 26
MEMPHIS - - - - 62	LITTLE ROCK - - - - 67	HILL AFB - - - - 72	ANDREWS AFB - - - - 30
MEXICO CITY - - - - 62	LOCKBOURNE - - - - 67	HOMESTEAD AFB - - - - 72	BOISE - - - - - 40
MINOT AFB - - - - 62	LORING AFB - - - - 67	HUNTER AAF - - - - 73	CANNON AFB - - - - 52
MINN-ST PAUL - - - - 62	LUKE AFB - - - - 68	HUNTSVILLE - - - - 73	CARSWELL AFB - - - - 58
NELLIS AFB - - - - 62	MCGUIRE AFB - - - - 68	JACKSONVILLE - - - - 73	CHERRY PT MCAS - - - - 64
NEW CUMBERLAND - - - - 62	MEMPHIS - - - - 68	JUNEAU - - - - 73	CHICAGO - - - - 70
NEW ORLEANS - - - - 63	MEXICO CITY - - - - 68	KEY WEST - - - - 73	CORPUS CHRISTI - - - - 77
NIAGARA FALLS - - - - 63	MINOT AFB - - - - 68	LARSON AFB - - - - 73	DOVER AFB - - - - 77
OXNARD AFB - - - - 63	MINN-ST PAUL - - - - 68	LITTLE ROCK - - - - 73	EDMONTON - - - - 78
PATRICK AFB - - - - 63	NELLIS AFB - - - - 68	LOCKBOURNE - - - - 73	EGLIN AFB - - - - 78
PITTSBURGH - - - - 63	NEW CUMBERLAND - - - - 68	LORING AFB - - - - 73	EIELSON AFB - - - - 78
REGINA - - - - 63	NEW ORLEANS - - - - 68	LUKE AFB - - - - 74	ELLINGTON AFB - - - - 78
SCOTT AFB - - - - 63	NIAGARA FALLS - - - - 69	MCGUIRE AFB - - - - 74	ELLSWORTH AFB - - - - 78
SELFRIEDGE AFB - - - - 63	PATRICK AFB - - - - 69	MEMPHIS - - - - 74	ELMENDORF AFB - - - - 78
SHAW AFB - - - - 63	PITTSBURGH - - - - 69	MEXICO CITY - - - - 74	EL TORO MCAS - - - - 78
WESTOVER AFB - - - - 64	REGINA - - - - 69	MINOT AFB - - - - 74	ENGLAND AFB - - - - 78
WURTSMITH - - - - 64	SCOTT AFB - - - - 69	MINN-ST PAUL - - - - 74	FORT BENNING - - - - 78
YAKIMA - - - - 64	SELFRIEDGE AFB - - - - 69	NELLIS AFB - - - - 74	FORT BLISS - - - - 79
YELLOWKNIFE - - - - 64	SHAW AFB - - - - 69	NEW CUMBERLAND - - - - 74	FORT BRAGG/POPE - - - 79
	WESTOVER AFB - - - - 69	NEW ORLEANS - - - - 74	FORT CAMPBELL - - - - 79
	WURTSMITH - - - - 69	NIAGARA FALLS - - - - 75	FORT CARSON - - - - 79
		OXNARD AFB - - - - 75	FORT EUSTIS - - - - 79
CHERRY PT MCAS		PATRICK AFB - - - - 75	FORT HOOD - - - - 79
ANDREWS AFB - - - - 30	CHICAGO	PITTSBURGH - - - - 75	FORT HUACHUCA - - - - 79
BOISE - - - - 40	ALAMEDA NAS - - - - 21	REGINA - - - - 75	FORT KNOX - - - - 79
CANNON AFB - - - - 51	ANDREWS AFB - - - - 30	SCOTT AFB - - - - 75	FORT LEAVENWORTH - - - 79
CARSWELL AFB - - - - 58	BOISE - - - - 40	SELFRIEDGE AFB - - - - 75	FORT LEWIS - - - - 80
CHICAGO - - - - 64	CANNON AFB - - - - 51		
CHURCHILL - - - - 64			

CHURCHILL (CONT.)		CLARK AFB (CONT.)		CORPUS CHRISTI (CONT.)		DA NANG	
FORT ORD	80	MANDALAY	85	CHURCHILL	77	BANGKOK	38
FORT RUCKER	80	MEDAN	85	DOVER AFB	89	CALCUTTA	80
FORT SILL	80	MISAWA AB	85	EDMONTON	89	CLARK AFB	84
FORT WOLTERS	80	PEIPING	85	ELGIN AFB	89	COLOMBO	86
FRONISHER	80	PENANG	85	ELLINGTON AFB	89	DAVAO	95
GEN MITCHELL	80	PUSAN EAST	86	ELLSWORTH AFB	89	DJAKARTA	95
HILL AFB	80	SAIGON	86	FL TORO MCAS	89	HANOI	95
HUNTER AAF	80	SHANGHAI	86	ENGLAND AFB	90	HONG KONG	95
HUNTSVILLE	81	SINGAPORE	86	FORT BENNING	90	IWAKUNI	95
JACKSONVILLE	81	TAIPEI	86	FORT BLISS	90	IWO JIMA AB	95
JUNEAU	81	TOKYO	86	FORT BRAGG/POPE	90	KADENA AB	95
KODIAK	81	VANIMO	86	FORT CAMPBELL	90	KINPO AB	96
LARSON AFB	81			FORT CARSON	90	MANDALAY	96
LITTLE ROCK	81	COLOMBO		FORT EUSTIS	90	MEDAN	96
LOCKBOURNE	81	BANGKOK	38	FORT HNOO	90	NEW DELHI	96
LORING AFB	81	BOMBAY	47	FORT HUACHUCA	90	PEIPING	96
LUKE AFB	81	CALCUTTA	49	FORT KNOX	91	PENANG	96
MCGUIRE AFB	82	DA NANG	86	FORT LEAVENWORTH	91	PUSAN EAST	96
MEMPHIS	82	DIEGO GARCIA	86	FORT LEWIS	91	SAIGON	96
MINOT AFB	82	DJAKARTA	87	FORT ORD	91	SHANGHAI	96
MINN-ST PAUL	82	HANOI	87	FORT RUCKER	91	SINGAPORE	97
NELLIS AFB	82	KARACHI	87	FORT SILL	91	TAIPEI	97
NEW CUMBERLAND	82	LAHORE	87	FORT WOLTERS	91		
NEW ORLEANS	82	MANDALAY	87	GEN MITCHELL	91	DARWIN	
NIAGARA FALLS	82	MEDAN	87	HILL AFB	91	ADELAIDE	19
OXNARD AFB	82	NEW DELHI	87	HOMESTAD AFB	92	ANDERSON AFB	28
PATRICK AFB	83	PENANG	87	HUNTER AAF	92	BRISBANE	48
PITTSBURGH	83	SAIGON	87	HUNTSVILLE	92	CLARK AFB	84
PRINCE RAY	83	SINGAPORE	88	JACKSONVILLE	92	COOKTOWN	88
REGINA	83	ZAHEDAN	88	KEY WEST	92	DAVAO	97
SCOTT AFB	83			LARSON AFB	92	DJAKARTA	97
SELFRIDGE AFB	83	COOKTOWN		LITTLE ROCK	92	MELBOURNE	97
SHAW AFB	83	ADELAIDE	19	LOCKBOURNE	92	PERTH	97
THULE	83	ANDERSON AFB	27	LORING AFB	92	PORT MORESBY	97
WESTOVER AFB	83	BRISBANE	48	LUKE AFB	93	SINGAPORE	97
WURTSMITH	84	DARWIN	88	MCGUIRE AFB	93	VANIMO	97
YAKIMA	84	DAVAO	88	MEMPHIS	93		
YELLOWKNIFE	84	ENIWETOK ATOLL	88	MEXICO CITY	93	DAVAO	
		KWAJALEIN NS	88	MINOT AFB	93	ANDERSON AFB	28
CLARK AFB		MELBOURNE	88	MINN-ST PAUL	93	BANGKOK	38
ANDERSON AFB	27	NOUMEA	88	NELLIS AFB	93	CLARK AFB	84
BANGKOK	38	PERTH	88	NEW CUMBERLAND	93	COOKTOWN	88
CALCUTTA	49	PORT MORESBY	89	NEW ORLEANS	93	DA NANG	95
CHITOSE AB	76	SUVA, FIJI	89	NIAGARA FALLS	94	DARWIN	97
DA NANG	84	VANIMO	89	OXNARD AFB	94	DJAKARTA	98
DARWIN	84			PATRICK AFB	94	HANOI	98
DAVAO	84	CORPUS CHRISTI		PITTSBURGH	94	HONG KONG	98
DJAKARTA	84	ALAMEDA NAS	21	REGINA	94	IWAKUNI	98
HANOI	84	ANDREWS AFB	30	SCOTT AFB	94	IWO JIMA AB	98
HONG KONG	84	ROISE	41	SELFRIDGE AFB	94	KADENA AB	98
IWAKUNI	85	CANNON AFB	52	SHAW AFB	94	KINPO AB	98
IWO JIMA AB	85	CARSWELL AFB	58	WESTOVER AFB	94	MANDALAY	98
KADENA AB	85	CHERRY PT MCAS	64	WURTSMITH	95	MEDAN	98
KINPO AB	85	CHICAGO	70			PENANG	98

DAVAO (CONT.)

PORT MORESBY - - - - 99
 PUSAN EAST - - - - 99
 SAIGON - - - - 99
 SHANGHAI - - - - 99
 SINGAPORE - - - - 99
 TAIPEI - - - - 99
 TOKYO - - - - 99
 VANINO - - - - 99

DHAMRAN

ABADAN - - - - 17
 ADEN - - - - 20
 BAGHDAD - - - - 37
 BOMRAY - - - - 47
 KARACHI - - - - 100
 LAHORE - - - - 100
 NEW DELHI - - - - 100
 TEHRAN - - - - 100
 ZAHEDAN - - - - 100

DIEGO GARCIA

BOMBAY - - - - 47
 COLUMBO - - - - 86
 KARACHI - - - - 100
 MAURITIUS ISLAND - - 100
 MEDAN - - - - 100
 PENANG - - - - 100
 SINGAPORE - - - - 101

DJAKARTA

BANGKOK - - - - 38
 CLARK AFB - - - - 84
 COLUMBO - - - - 87
 DA NANG - - - - 95
 DARWIN - - - - 97
 DAVAO - - - - 98
 HANOI - - - - 101
 HONG KONG - - - - 101
 MANALAY - - - - 101
 MEDAN - - - - 101
 PENANG - - - - 101
 PERTH - - - - 101
 SAIGON - - - - 101
 SINGAPORE - - - - 101

DOVER AFB

ROISE - - - - 41
 CANNON AFB - - - - 52
 CARSWELL AFB - - - - 58
 CHERRY PT MCAS - - - 64
 CHICAGO - - - - 70
 CHURCHILL - - - - 77
 CORPUS CHRISTI - - - 89
 EDMONTON - - - - 102

DOVER AFB (CONT.)

EGLIN AFB - - - - 102
 ELLINGTON AFB - - - 102
 ELLSWORTH AFB - - - 102
 ENGLAND AFB - - - - 102
 FORT BENNING - - - - 102
 FORT BLISS - - - - 102
 FORT BRAGG/POPE - - 102
 FORT CAMPBELL - - - 102
 FORT CARSON - - - - 103
 FORT HOOD - - - - 103
 FORT HUACHUCA - - - 103
 FORT KNOX - - - - 103
 FORT LEAVENWORTH - - 103
 FORT RUCKER - - - - 103
 FORT SILL - - - - 103
 FORT WOLTERS - - - - 103
 FROBISHER - - - - 103
 GEN MITCHELL - - - - 104
 HILL AFB - - - - 104
 HOMESTEAD AFB - - - 104
 HUNTER AFB - - - - 104
 HUNTSVILLE - - - - 104
 JACKSONVILLE - - - 104
 KEY WEST - - - - 104
 LARSON AFB - - - - 104
 LITTLE ROCK - - - - 104
 LOCKBURNNE - - - - 105
 LORING AFB - - - - 105
 LUKE AFB - - - - 105
 MEMPHIS - - - - 105
 MEXICO CITY - - - - 105
 MINOT AFB - - - - 105
 MINN-ST PAUL - - - - 105
 NELLIS AFB - - - - 105
 NEW ORLEANS - - - - 105
 NIAGARA FALLS - - - 106
 PATRICK AFB - - - - 106
 PITTSBURGH - - - - 106
 REGINA - - - - 106
 SCOTT AFB - - - - 106
 SELFRIDGE AFB - - - 106
 SHAW AFB - - - - 106
 WESTOVER AFB - - - 106
 WILKINS - - - - 106
 YELLOWKNIFE - - - - 107

DUTCH HARBOR

ADAK NS - - - - 18
 ATTU - - - - 36
 EDMONTON - - - - 107
 ELLSWORTH AFB - - - 107
 EL MENDORF AFB - - - 107
 FORT LEWIS - - - - 107
 HICKAM AFB - - - - 107

DUTCH HARBOR (CONT.)

JUNEAU - - - - 107
 KODIAK - - - - 107
 LARSON AFB - - - - 107
 MIDWAY ISLAND - - - 108
 PRUDHOE BAY - - - - 108
 SHENYA - - - - 108
 YAKIMA - - - - 108
 YELLOWKNIFE - - - - 108

EDMONTON

ALAMEDA NAS - - - - 21
 ALERT - - - - 26
 ANDREWS AFB - - - - 30
 ROISE - - - - 41
 CANNON AFB - - - - 52
 CARSWELL AFB - - - - 58
 CHERRY PT MCAS - - - 64
 CHICAGO - - - - 70
 CHURCHILL - - - - 78
 CORPUS CHRISTI - - - 89
 DOVER AFB - - - - 102
 DUTCH HARBOR - - - - 107
 EGLIN AFB - - - - 108
 ELLSWORTH AFB - - - 108
 EL MENDORF AFB - - - 109
 EL TONO MCAS - - - - 109
 ENGLAND AFB - - - - 109
 FORT BENNING - - - - 109
 FORT BLISS - - - - 109
 FORT BRAGG/POPE - - 109
 FORT CAMPBELL - - - 109
 FORT CARSON - - - - 109
 FORT EUSTIS - - - - 109
 FORT HOOD - - - - 110
 FORT HUACHUCA - - - 110
 FORT KNOX - - - - 110
 FORT LEAVENWORTH - - 110
 FORT LEWIS - - - - 110
 FORT ORD - - - - 110
 FORT RUCKER - - - - 110
 FORT SILL - - - - 110
 FORT WOLTERS - - - - 110
 FROBISHER - - - - 111
 GEN MITCHELL - - - - 111
 HILL AFB - - - - 111
 HUNTER AFB - - - - 111
 HUNTSVILLE - - - - 111
 JACKSONVILLE - - - 111
 JUNEAU - - - - 111
 KODIAK - - - - 111
 LARSON AFB - - - - 111
 LITTLE ROCK - - - - 112

EDMONTON (CONT.)

LOCKBURNNE - - - - 112
 LORING AFB - - - - 112
 LUKE AFB - - - - 112
 MCGUIRE AFB - - - - 112
 MEMPHIS - - - - 112
 MINOT AFB - - - - 112
 MINN-ST PAUL - - - - 112
 NELLIS AFB - - - - 112
 NEW CUMBERLAND - - - 113
 NEW ORLEANS - - - - 113
 NIAGARA FALLS - - - 113
 OXNARD AFB - - - - 113
 PITTSBURGH - - - - 113
 PRUDHOE BAY - - - - 113
 REGINA - - - - 113
 SCOTT AFB - - - - 113
 SELFRIDGE AFB - - - 113
 SHAW AFB - - - - 114
 THULE - - - - 114
 WESTOVER AFB - - - 114
 WILKINS - - - - 114
 YAKIMA - - - - 114
 YELLOWKNIFE - - - - 114

EGLIN AFB

ALAMEDA NAS - - - - 21
 ANDREWS AFB - - - - 30
 ROISE - - - - 41
 CANNON AFB - - - - 52
 CARSWELL AFB - - - - 58
 CHERRY PT MCAS - - - 64
 CHICAGO - - - - 70
 CHURCHILL - - - - 78
 CORPUS CHRISTI - - - 89
 DOVER AFB - - - - 102
 EDMONTON - - - - 108
 ELLINGTON AFB - - - 114
 ELLSWORTH AFB - - - 114
 EL TONO MCAS - - - - 114
 ENGLAND AFB - - - - 115
 FORT BLISS - - - - 115
 FORT BRAGG/POPE - - - 115
 FORT CAMPBELL - - - 115
 FORT CARSON - - - - 115
 FORT EUSTIS - - - - 115
 FORT HOOD - - - - 115
 FORT HUACHUCA - - - 115
 FORT KNOX - - - - 115
 FORT LEAVENWORTH - - 116
 FORT LEWIS - - - - 116
 FORT ORD - - - - 116
 FORT SILL - - - - 116
 FORT WOLTERS - - - - 116
 GEN MITCHELL - - - - 116

FELIN AFB (CONT.)

HILL AFB	-116
HIMMELSTAD AFB	-116
HUNTER AFB	-116
HUNTSVILLE	-117
JACKSONVILLE	-117
KEY WEST	-117
LANSON AFB	-117
LITTLE ROCK	-117
LOCKBOURNE	-117
LORING AFB	-117
LUKE AFB	-117
MCQUIRE AFB	-117
MEMPHIS	-118
MEXICO CITY	-118
MINOT AFB	-118
MINN-ST PAUL	-118
NELLS AFB	-118
NEW CUMBERLAND	-118
NEW ORLEANS	-118
NIAGARA FALLS	-118
ONHARD AFB	-118
PATRICK AFB	-119
PITTSBURGH	-119
REGINA	-119
SCOTT AFB	-119
SELFRIDGE AFB	-119
SHAW AFB	-119
WESTOVER AFB	-119
Wurtsmith	-119
YAKIMA	-119

FELSON AFB

ADAK NS	-119
ALAMEDA NAS	-121
ALFRT	-121
ATTU	-121
BUISE	-121
CHURCHILL	-121
DUTCH HARBOR	-121
EDMONTON	-121
ELLSWORTH AFB	-121
ELMENDORF AFB	-121
FORT LEWIS	-121
FORT MON	-121
FORT RUCKER	-121
HILL AFB	-121
JIMPAU	-121
KODIAK	-121
LANSON AFB	-121
MINOT AFB	-121
PRUDHOMME	-121
REGINA	-121
SHENYA	-121
THULE	-121

ELLINGTON AFB (CONT.)

YAKIMA	-121
YELLOWKNIFE	-121
ELLINGTON AFB	
ALAMEDA NAS	-22
ANDREWS AFB	-96
BUISE	-96
CANNON AFB	-92
CARSWELL AFB	-99
CHERRY PT MCAS	-69
CHICAGO	-70
CHURCHILL	-70
CIMPUS CHRISTI	-89
DJIVER AFB	-102
EDMONTON	-100
EGLIN AFB	-114
ELLSWORTH AFB	-121
FL TOWN MCAS	-121
FLYING AFB	-122
FORT BENNING	-122
FORT BLISS	-122
FORT BRAGG/POPE	-122
FORT CAMPBELL	-122
FORT CASSIN	-122
FORT FUSTIS	-122
FORT HEND	-122
FORT HUACHUCA	-122
FORT KNOX	-123
FORT LEAVENWORTH	-123
FORT LIND	-123
FORT RUCKER	-123
FORT SILL	-123
FORT WALTERS	-123
GEN MITCHELL	-123
HILL AFB	-123
HIMMELSTAD AFB	-124
HUNTSVILLE	-124
JACKSONVILLE	-124
KEY WEST	-124
LANSON AFB	-124
LITTLE ROCK	-124
LOCKBOURNE	-124
LORING AFB	-124
LUKE AFB	-124
MCQUIRE AFB	-124
MEMPHIS	-124
MEXICO CITY	-124
MINOT AFB	-124
MINN-ST PAUL	-124
NELLS AFB	-124
NEW CUMBERLAND	-124
NEW ORLEANS	-124

ELLINGTON AFB (CONT.)

NIAGARA FALLS	-120
ONHARD AFB	-120
PATRICK AFB	-120
PITTSBURGH	-120
REGINA	-120
SCOTT AFB	-120
SELFRIDGE AFB	-120
SHAW AFB	-120
WESTOVER AFB	-120
Wurtsmith	-127
YAKIMA	-127
ELLSWORTH AFB	
ALAMEDA NAS	-22
ANDREWS AFB	-91
BUISE	-91
CANNON AFB	-92
CARSWELL AFB	-99
CHERRY PT MCAS	-69
CHICAGO	-70
CHURCHILL	-70
CIMPUS CHRISTI	-89
DJIVER AFB	-102
EDMONTON	-100
EGLIN AFB	-114
ELLSWORTH AFB	-120
ELLINGTON AFB	-121
ELMENDORF AFB	-127
EL TOWN MCAS	-127
ENGLAND AFB	-127
FORT ARNOLD	-127
FORT BLISS	-127
FORT BRAGG/POPE	-127
FORT CAMPBELL	-127
FORT CASSIN	-128
FORT FUSTIS	-128
FORT HEND	-128
FORT HUACHUCA	-128
FORT KNOX	-128
FORT LEAVENWORTH	-128
FORT LEWIS	-128
FORT MAD	-128
FORT RUCKER	-128
FORT SILL	-129
FORT WALTERS	-129
FROBISHER	-129
GEN MITCHELL	-129
HILL AFB	-129
HIMMELSTAD AFB	-129
HUNTER AFB	-129
HUNTSVILLE	-129
JACKSONVILLE	-129
JIMPAU	-130
KEY WEST	-130

ELLSWORTH AFB (CONT.)

KODIAK	-130
LANSON AFB	-130
LITTLE ROCK	-130
LOCKBOURNE	-130
LORING AFB	-130
LUKE AFB	-130
MCQUIRE AFB	-130
MEMPHIS	-131
MEXICO CITY	-131
MINOT AFB	-131
MINN-ST PAUL	-131
NELLS AFB	-131
NEW CUMBERLAND	-131
NEW ORLEANS	-131
NIAGARA FALLS	-131
ONHARD AFB	-131
PATRICK AFB	-132
PITTSBURGH	-132
REGINA	-132
SCOTT AFB	-132
SELFRIDGE AFB	-132
SHAW AFB	-132
WESTOVER AFB	-132
Wurtsmith	-132
YAKIMA	-132
YELLOWKNIFE	-133

ELMENDORF AFB

ADAK NS	-10
ALAMEDA NAS	-22
ALFRT	-26
ATTU	-36
BUISE	-41
CHURCHILL	-70
DUTCH HARBOR	-107
EDMONTON	-109
ELLSWORTH AFB	-120
ELLSWORTH AFB	-127
FORT LEWIS	-133
FORT ORD	-133
HILL AFB	-133
JIMPAU	-133
KODIAK	-133
LANSON AFB	-133
MINOT AFB	-133
NELLS AFB	-133
PRUDHOMME	-134
REGINA	-134
SHENYA	-134
THULE	-134
YAKIMA	-134
YELLOWKNIFE	-134

EL TORO MCAS

ALAMEDA NAS	- - - - 22
ANDREWS AFB	- - - - 31
NOISE	- - - - 42
CANNON AFB	- - - - 53
CARSWELL AFB	- - - - 59
CHICAGO	- - - - 70
CHURCHILL	- - - - 79
CORPUS CHRISTI	- - - - 89
EDMONTON	- - - - 109
EGLIN AFB	- - - - 115
ELLINGTON AFB	- - - - 122
ELLSWORTH AFB	- - - - 127
ENGLAND AFB	- - - - 134
FORT BENNING	- - - - 145
FORT BLISS	- - - - 150
FORT BRAGG/POPE	- - - - 150
FORT CAMPBELL	- - - - 150
FORT CARSON	- - - - 150
FORT EUSTIS	- - - - 150
FORT HODD	- - - - 150
FORT HUACHUCA	- - - - 150
FORT KNOX	- - - - 150
FORT LEAVENWORTH	- - - - 150
FORT LEWIS	- - - - 150
FORT ORD	- - - - 150
FORT RUCKER	- - - - 150
FORT SILL	- - - - 150
FORT WALTERS	- - - - 150
GEN MITCHELL	- - - - 150
HILL AFB	- - - - 150
HOMESTEAD AFB	- - - - 150
HUNTER AFB	- - - - 150
HUNTSVILLE	- - - - 150
JACKSONVILLE	- - - - 150
JUNEAU	- - - - 150
KEY WEST	- - - - 150
LARSON AFB	- - - - 150
LITTLE ROCK	- - - - 150
LOCKBOURNE	- - - - 150
LUKE AFB	- - - - 150
MEMPHIS	- - - - 150
MEXICO CITY	- - - - 150
MINOT AFB	- - - - 150
MINN-ST PAUL	- - - - 150
NELLIS AFB	- - - - 150
NEW CUMBERLAND	- - - - 150
NEW ORLEANS	- - - - 150
NIAGARA FALLS	- - - - 150
PATRICK AFB	- - - - 150
PITTSBURGH	- - - - 150
REGINA	- - - - 150
SCOTT AFB	- - - - 150
SELFRIDGE AFB	- - - - 150
SHAW AFB	- - - - 150

EL TORO MCAS (CONT.)

HUNTSVILLE	- - - - 150
YAKIMA	- - - - 150
YELLOWKNIFE	- - - - 150
ENGLAND AFB	
ALAMEDA NAS	- - - - 22
ANDREWS AFB	- - - - 31
NOISE	- - - - 42
CANNON AFB	- - - - 53
CARSWELL AFB	- - - - 59
CHERRY PT MCAS	- - - - 65
CHICAGO	- - - - 70
CHURCHILL	- - - - 79
CORPUS CHRISTI	- - - - 89
DOVER AFB	- - - - 102
EDMONTON	- - - - 109
EGLIN AFB	- - - - 115
ELLINGTON AFB	- - - - 122
ELLSWORTH AFB	- - - - 127
EL TORO MCAS	- - - - 134
FORT BENNING	- - - - 145
FORT BLISS	- - - - 150
FORT BRAGG/POPE	- - - - 150
FORT CAMPBELL	- - - - 150
FORT CARSON	- - - - 150
FORT EUSTIS	- - - - 150
FORT HODD	- - - - 150
FORT HUACHUCA	- - - - 150
FORT KNOX	- - - - 150
FORT LEAVENWORTH	- - - - 150
FORT LEWIS	- - - - 150
FORT ORD	- - - - 150
FORT RUCKER	- - - - 150
FORT SILL	- - - - 150
FORT WALTERS	- - - - 150
GEN MITCHELL	- - - - 150
HILL AFB	- - - - 150
HOMESTEAD AFB	- - - - 150
HUNTER AFB	- - - - 150
HUNTSVILLE	- - - - 150
JACKSONVILLE	- - - - 150
KEY WEST	- - - - 150
LARSON AFB	- - - - 150
LITTLE ROCK	- - - - 150
LOCKBOURNE	- - - - 150
LORING AFB	- - - - 150
LUKE AFB	- - - - 150
MCGUIRE AFB	- - - - 150
MEMPHIS	- - - - 150
MEXICO CITY	- - - - 150
MINOT AFB	- - - - 150
MINN-ST PAUL	- - - - 150
NELLIS AFB	- - - - 150
NEW CUMBERLAND	- - - - 150

ENGLAND AFB (CONT.)

NEW ORLEANS	- - - - 143
NIAGARA FALLS	- - - - 143
ONARD AFB	- - - - 143
PATRICK AFB	- - - - 143
PITTSBURGH	- - - - 143
REGINA	- - - - 144
SCOTT AFB	- - - - 144
SELFRIDGE AFB	- - - - 144
SHAW AFB	- - - - 144
WFOVER AFB	- - - - 144
HUNTSVILLE	- - - - 144
YAKIMA	- - - - 144
FINNETIM ATOLL	
ANDERSON AFB	- - - - 20
CUMTOWN	- - - - 80
IM JINA AN	- - - - 144
JOHNSTON ISLAND	- - - - 144
KWAJALEIN IS	- - - - 145
MIDWAY ISLAND	- - - - 145
PORT MAFSAY	- - - - 145
SUVA, FIJI	- - - - 145
TIMBU	- - - - 145
YAKIMA	- - - - 145
WAKE ISLAND	- - - - 145
FORT BENNING	
ALAMEDA NAS	- - - - 22
ANDREWS AFB	- - - - 31
NOISE	- - - - 42
CANNON AFB	- - - - 53
CARSWELL AFB	- - - - 59
CHERRY PT MCAS	- - - - 65
CHICAGO	- - - - 71
CHURCHILL	- - - - 79
CORPUS CHRISTI	- - - - 90
DOVER AFB	- - - - 102
EDMONTON	- - - - 109
ELLINGTON AFB	- - - - 122
ELLSWORTH AFB	- - - - 127
EL TORO MCAS	- - - - 134
ENGLAND AFB	- - - - 139
FORT BLISS	- - - - 145
FORT BRAGG/POPE	- - - - 145
FORT CAMPBELL	- - - - 146
FORT CARSON	- - - - 146
FORT EUSTIS	- - - - 146
FORT HODD	- - - - 146
FORT HUACHUCA	- - - - 146
FORT KNOX	- - - - 146
FORT LEAVENWORTH	- - - - 146
FORT LEWIS	- - - - 146
FORT ORD	- - - - 146
FORT SILL	- - - - 147

FORT BENNING (CONT.)

FORT WALTERS	- - - - 147
FRIDISHER	- - - - 147
GEN MITCHELL	- - - - 147
HILL AFB	- - - - 147
HOMESTEAD AFB	- - - - 147
HUNTER AFB	- - - - 147
HUNTSVILLE	- - - - 147
JACKSONVILLE	- - - - 147
KEY WEST	- - - - 148
LARSON AFB	- - - - 148
LITTLE ROCK	- - - - 148
LOCKBOURNE	- - - - 148
LORING AFB	- - - - 148
LUKE AFB	- - - - 148
MCGUIRE AFB	- - - - 148
MEMPHIS	- - - - 148
MEXICO CITY	- - - - 148
MINOT AFB	- - - - 149
MINN-ST PAUL	- - - - 149
NELLIS AFB	- - - - 149
NEW CUMBERLAND	- - - - 149
NEW ORLEANS	- - - - 149
NIAGARA FALLS	- - - - 149
ONARD AFB	- - - - 149
PATRICK AFB	- - - - 149
PITTSBURGH	- - - - 149
REGINA	- - - - 150
SCOTT AFB	- - - - 150
SELFRIDGE AFB	- - - - 150
SHAW AFB	- - - - 150
WFOVER AFB	- - - - 150
HUNTSVILLE	- - - - 150
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CANNON AFB	- - - - 53
CARSWELL AFB	- - - - 59
CHERRY PT MCAS	- - - - 65
CHICAGO	- - - - 71
CHURCHILL	- - - - 79
CORPUS CHRISTI	- - - - 90
DOVER AFB	- - - - 102
EDMONTON	- - - - 109
EGLIN AFB	- - - - 115
ELLINGTON AFB	- - - - 122
ELLSWORTH AFB	- - - - 127
EL TORO MCAS	- - - - 134
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FORT BRAGG/POPE	156
FORT CAMPBELL	161
FORT CARSON	166
FORT EUSTIS	170
FORT HUACHUCA	178
FORT KNOX	183
FORT LEAVENWORTH	187
FORT LEWIS	191
FORT ORD	194
FORT RUCKER	197
GEN MITCHELL	204
HILL AFB	204
HOMESTEAD AFB	204
HUNTER AAF	204
HUNTSVILLE	205
JACKSONVILLE	205
KEY WEST	205
LARSON AFB	205
LITTLE ROCK	205

FORT WOLTERS (CONT.)

LOCKBOURNE	-205
LORING AFB	-205
LUKE AFB	-205
MCGUIRE AFB	-205
MEMPHIS	-206
MEXICO CITY	-206
MINOT AFB	-206
MINN-ST PAUL	-206
NELLIS AFB	-206
NEW CUMBERLAND	-206
NEW ORLEANS	-206
NIAGARA FALLS	-206
OXNARD AFB	-206
PATRICK AFB	-207
PITTSBURGH	-207
REGINA	-207
SCOTT AFB	-207
SELFRIDGE AFB	-207
SHAW AFB	-207
WESTOVER AFB	-207
Wurtsmith	-207
YAKIMA	-207
YELLOWKNIFE	-208

FABRISHER

ALERT	27
ANDREWS AFB	32
CHERRY PT MCAS	66
CHICAGO	72
CHURCHILL	80
DOVER AFB	103
EDMONTON	111
EIELSON AFB	120
ELLSWORTH AFB	129
FORT BENNING	147
FORT BRAGG/POPE	157
FORT CAMPBELL	161
FORT CARSON	166
FORT EUSTIS	170
FORT KNOX	183
FORT LEAVENWORTH	187
GEN MITCHELL	208
HUNTER AAF	208
HUNTSVILLE	208
JUNEAU	208
LARSON AFB	208
LITTLE ROCK	208
LOCKBOURNE	208
LORING AFB	208
MCGUIRE AFB	209
MEMPHIS	209
MINOT AFB	209
MINN-ST PAUL	209
NEW CUMBERLAND	209

FRONISHER (CONT.)

NIAGARA FALLS - - - -209
 PITTSBURGH - - - -209
 PRUDHOM RAY - - - -209
 REGINA - - - -209
 SCOTT AFB - - - -210
 SELFRIDGE AFB - - - -210
 SHAW AFB - - - -210
 THULE - - - -210
 WESTOVER AFB - - - -210
 WURTSMITH - - - -210
 YAKIMA - - - -210
 YELLOWKNIFE - - - -210

GEN MITCHELL

ALAMEDA NAS - - - -23
 ANDREWS AFB - - - -32
 BOISE - - - -43
 CANNON AFB - - - -54
 CARSWELL AFB - - - -60
 CHERRY PT MCAS - - - -66
 CHURCHILL - - - -80
 CORPUS CHRISTI - - - -91
 DOVER AFB - - - -104
 EDMONTON - - - -111
 EGLIN AFB - - - -116
 ELLINGTON AFB - - - -123
 ELLSWORTH AFB - - - -129
 EL TORO MCAS - - - -136
 ENGLAND AFB - - - -141
 FORT BENNING - - - -147
 FORT BLISS - - - -152
 FORT BRAGG/POPE - - - -157
 FORT CAMPBELL - - - -161
 FORT CARSON - - - -166
 FORT EUSTIS - - - -170
 FORT HOOD - - - -174
 FORT HUACHUCA - - - -179
 FORT KNOX - - - -183
 FORT LEAVENWORTH - - - -187
 FORT LEWIS - - - -191
 FORT ORD - - - -194
 FORT RUCKER - - - -197
 FORT SILL - - - -201
 FORT WOLTERS - - - -204
 FRONISHER - - - -208
 HILL AFB - - - -210
 HOMESTEAD AFB - - - -211
 HUNTER AAF - - - -211
 HUNTSVILLE - - - -211
 JACKSONVILLE - - - -211
 JUNEAU - - - -211
 KEY WEST - - - -211
 LARSON AFB - - - -211
 LITTLE ROCK - - - -211

GEN MITCHELL (CONT.)

LOCKBOURNE - - - -211
 LORING AFB - - - -212
 LUKE AFB - - - -212
 MCGUIRE AFB - - - -212
 MEMPHIS - - - -212
 MEXICO CITY - - - -212
 MINOT AFB - - - -212
 MINN-ST PAUL - - - -212
 NELLIS AFB - - - -212
 NEW CUMBERLAND - - - -212
 NEW ORLEANS - - - -213
 NIAGARA FALLS - - - -213
 OXNARD AFB - - - -213
 PATRICK AFB - - - -213
 PITTSBURGH - - - -213
 REGINA - - - -213
 SCOTT AFB - - - -213
 SELFRIDGE AFB - - - -213
 SHAW AFB - - - -213
 WESTOVER AFB - - - -214
 WURTSMITH - - - -214
 YAKIMA - - - -214
 YELLOWKNIFE - - - -214

HANOI

BANGKOK - - - -38
 BOMBAY - - - -47
 CALCUTTA - - - -50
 CLARK AFB - - - -84
 COLONBO - - - -87
 DA NANG - - - -95
 DAVAO - - - -98
 DJAKARTA - - - -101
 HONG KONG - - - -214
 IWAKUNI - - - -214
 IWO JIMA AB - - - -214
 KADENA AB - - - -214
 KIMPO AB - - - -214
 LAHORE - - - -215
 MANDALAY - - - -215
 MEDAN - - - -215
 NEW DELHI - - - -215
 PEIPING - - - -215
 PENANG - - - -215
 PUSAN EAST - - - -215
 SAIGON - - - -215
 SHANGHAI - - - -215
 SINGAPORE - - - -216
 TAIPEI - - - -216
 TOKYO - - - -216

HICKAM AFB

DUTCH HARBOR - - - -107
 JOHNSTON ISLAND - - - -216

HICKAM AFB (CONT.)

MIDWAY ISLAND - - - -216
 WAKE ISLAND - - - -216

HILL AFB

ALAMEDA NAS - - - -24
 ANDREWS AFB - - - -32
 BOISE - - - -43
 CANNON AFB - - - -54
 CARSWELL AFB - - - -61
 CHERRY PT MCAS - - - -67
 CHICAGO - - - -72
 CHURCHILL - - - -80
 CORPUS CHRISTI - - - -91
 DOVER AFB - - - -104
 EDMONTON - - - -111
 EGLIN AFB - - - -116
 EIELSON AFB - - - -120
 ELLINGTON AFB - - - -123
 ELLSWORTH AFB - - - -129
 ELMENDORF AFB - - - -133
 EL TORO MCAS - - - -136
 ENGLAND AFB - - - -141
 FORT BENNING - - - -147
 FORT BLISS - - - -152
 FORT BRAGG/POPE - - - -157
 FORT CAMPBELL - - - -161
 FORT CARSON - - - -166
 FORT EUSTIS - - - -171
 FORT HOOD - - - -174
 FORT HUACHUCA - - - -179
 FORT KNOX - - - -183
 FORT LEAVENWORTH - - - -187
 FORT LEWIS - - - -191
 FORT ORD - - - -194
 FORT RUCKER - - - -197
 FORT SILL - - - -201
 FORT WOLTERS - - - -204
 GEN MITCHELL - - - -210
 HOMESTEAD AFB - - - -216
 HUNTER AAF - - - -216
 HUNTSVILLE - - - -216
 JACKSONVILLE - - - -217
 JUNEAU - - - -217
 KEY WEST - - - -217
 KODIAK - - - -217
 LARSON AFB - - - -217
 LITTLE ROCK - - - -217
 LOCKBOURNE - - - -217
 LORING AFB - - - -217
 LUKE AFB - - - -217
 MCGUIRE AFB - - - -218
 MEMPHIS - - - -218
 MEXICO CITY - - - -218
 MINOT AFB - - - -218

HILL AFB (CONT.)

MINN-ST PAUL - - - -218
 NELLIS AFB - - - -218
 NEW CUMBERLAND - - - -218
 NEW ORLEANS - - - -218
 NIAGARA FALLS - - - -218
 OXNARD AFB - - - -219
 PATRICK AFB - - - -219
 PITTSBURGH - - - -219
 REGINA - - - -219
 SCOTT AFB - - - -219
 SELFRIDGE AFB - - - -219
 SHAW AFB - - - -219
 WESTOVER AFB - - - -219
 WURTSMITH - - - -219
 YAKIMA - - - -220
 YELLOWKNIFE - - - -220

HOMESTEAD AFB

ANDREWS AFB - - - -33
 CANNON AFB - - - -54
 CARSWELL AFB - - - -61
 CHERRY PT MCAS - - - -67
 CHICAGO - - - -72
 CORPUS CHRISTI - - - -92
 DOVER AFB - - - -104
 EGLIN AFB - - - -116
 ELLINGTON AFB - - - -124
 ELLSWORTH AFB - - - -129
 EL TORO MCAS - - - -136
 ENGLAND AFB - - - -141
 FORT BENNING - - - -147
 FORT BLISS - - - -152
 FORT BRAGG/POPE - - - -157
 FORT CAMPBELL - - - -161
 FORT CARSON - - - -166
 FORT EUSTIS - - - -171
 FORT HOOD - - - -175
 FORT HUACHUCA - - - -179
 FORT KNOX - - - -183
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 FORT RUCKER - - - -197
 FORT SILL - - - -201
 FORT WOLTERS - - - -204
 GEN MITCHELL - - - -211
 HILL AFB - - - -216
 HUNTER AAF - - - -220
 HUNTSVILLE - - - -220
 JACKSONVILLE - - - -220
 LITTLE ROCK - - - -220
 LOCKBOURNE - - - -220
 LORING AFB - - - -220
 LUKE AFB - - - -220
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ELLINGTON AFB	-124
ELLSWORTH AFB	-129
EL TORO MCAS	-137
ENGLAND AFB	-141
FORT BENNING	-147
FORT BLISS	-152
FORT BRAGG/POPE	-157
FORT CAMPBELL	-162
FORT CARSON	-166
FORT CUSTIS	-171
FORT HOOD	-175
FORT HUACHUCA	-179
FORT KNOX	-184
FORT LEAVENWORTH	-188
FORT RUCKER	-198
FORT SILL	-201
FORT WOLTERS	-205
GEN MITCHELL	-211
HILL AFB	-217
HOMESTEAD AFB	-220
HUNTSVILLE	-227
KEY WEST	-232
LITTLE ROCK	-232
LOCKBOURNE	-232
LORING AFB	-232
LUKE AFB	-233
MCGUIRE AFB	-233
MEMPHIS	-233
MEXICO CITY	-233
MINOT AFB	-233
MINN-ST PAUL	-233
NELLIS AFB	-233
NEW CUMBERLAND	-233
NEW ORLEANS	-233
NIAGARA FALLS	-234
OXNARD AFB	-234
PITTSBURGH	-234
REGINA	-234
SCOTT AFB	-234
SELFRIDGE AFB	-234
SHAW AFB	-234
WESTOVER AFB	-234
WURTSMITH	-234

JOHNSTON ISLAND

ENIWEATOK ATOLL	-144
HICKAM AFB	-216
KWAJALEIN NS	-235
MIDWAY ISLAND	-235
PAGO PAGO	-235
WAKE ISLAND	-235

JUNEAU

ADAK NS	-18
ALAMEDA NAS	-24
ALERT	-27
ATTU	-36
BOISE	-44
CANNON AFB	-55
CHICAGO	-73
CHURCHILL	-81
DUTCH HARBOR	-107
EDMONTON	-111
EIELSON AFB	-120
ELLSWORTH AFB	-130
ELMENDORF AFB	-133
EL TORO MCAS	-137
FORT BLISS	-152
FORT CARSON	-167
FORT HUACHUCA	-179
FORT LEAVENWORTH	-188
FORT LEWIS	-192
FORT ORD	-195
FROBISHER	-208
GEN MITCHELL	-211
HILL AFB	-217
KODIAK	-235
LARSON AFB	-235
LUKE AFB	-235
MINOT AFB	-235
MINN-ST PAUL	-235
NELLIS AFB	-236
OXNARD AFB	-236
PRUDHOM RAY	-236
REGINA	-236
SHEMYA	-236
THULE	-236
YAKIMA	-236
YELLOWKNIFE	-236

KADENA AB

ANDERSON AFB	-28
BANGKOK	-38
CHITOSE AB	-76
CLARK AFB	-85
DA NANG	-95
DAVAN	-98
HANOI	-214
HONG KONG	-223
IWAKUNI	-230
IWO JIMA AB	-231
KIMPO AB	-236
MANDALAY	-237
MISAWA AB	-237
PEIPING	-237
PUSAN EAST	-237
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SHANGHAI	-237
TAIPEI	-237
TOKYO	-237
VANIMO	-237
KARACHI	
ABADAN	-17
ADEN	-20
BAGHDAD	-37
BANGKOK	-39
BOMBAY	-47
CALCUTTA	-50
CULMADO	-87
DHAHRAN	-100
DIEGO GARCIA	-100
LAMORE	-238
MANDALAY	-238
NEW DELHI	-238
TEHRAN	-238
ZAHEDAN	-238

KEY WEST

ANDREWS AFB	-33
CANNON AFB	-55
CARSWELL AFB	-61
CHERRY PT MCAS	-67
CHICAGO	-73
CORPUS CHRISTI	-92
DOVER AFB	-104
EGLIN AFB	-117
ELLINGTON AFB	-124
ELLSWORTH AFB	-130
EL TORO MCAS	-137
ENGLAND AFB	-142
FORT BENNING	-148
FORT BLISS	-153
FORT BRAGG/POPE	-157
FORT CAMPBELL	-162
FORT CARSON	-167
FORT CUSTIS	-171
FORT HOOD	-175
FORT HUACHUCA	-179
FORT KNOX	-184
FORT LEAVENWORTH	-188
FORT RUCKER	-198
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FORT WOLTERS	-205
GEN MITCHELL	-211
HILL AFB	-217
HUNTER AAF	-224
HUNTSVILLE	-227
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KEY WEST (CONT.)

LORING AFB	-238
LUKE AFB	-238
MCGUIRE AFB	-239
MEMPHIS	-239
MEXICO CITY	-239
MINOT AFB	-239
MINN-ST PAUL	-239
NELLIS AFB	-239
NEW CUMBERLAND	-239
NEW ORLEANS	-239
NIAGARA FALLS	-239
PATRICK AFB	-240
PITTSBURGH	-240
REGINA	-240
SCOTT AFB	-240
SELFRIDGE AFB	-240
SHAW AFB	-240
WESTOVER AFB	-240
WURTSMITH	-240

KIMPO AB

ANDERSON AFB	-28
BANGKOK	-38
CHITOSE AB	-76
CLARK AFB	-85
DA NANG	-95
DAVAN	-98
HANOI	-214
HONG KONG	-223
IWAKUNI	-230
IWO JIMA AB	-231
KADENA AB	-236
MANDALAY	-240
MISAWA AB	-241
PEIPING	-241
PUSAN EAST	-241
SAIGON	-241
SHANGHAI	-241
TAIPEI	-241
TOKYO	-241

KODIAK

ADAK NS	-18
ALAMEDA NAS	-24
ALERT	-27
ATTU	-36
BOISE	-44
CHURCHILL	-81
DUTCH HARBOR	-107
EDMONTON	-111
EIELSON AFB	-120
ELLSWORTH AFB	-130
ELMENDORF AFB	-133
FORT LEWIS	-192

KODIAK (CONT.)

FORT ORD-	-195
HILL AFB-	-217
JUNEAU-	-235
LARSON AFB-	-241
MINOT AFB-	-241
NELLIS AFB-	-242
OXNARD AFB-	-242
PRUDHOE HAY-	-242
REGINA-	-242
SHEMYA-	-242
THULE-	-242
YAKIMA-	-242
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ANDERSON AFB-	-28
CONKOWN-	-88
ENIWETOK ATOLL-	-145
IWO JIMA AR-	-231
JOHNSTON ISLAND-	-235
MIDWAY ISLAND-	-242
NOUMEA-	-243
PAGO PAGO-	-243
PORT MORESBY-	-243
SUVA, FIJI-	-243
VANIMO-	-243
WAKE ISLAND-	-243

LAHORE

ABADAN-	-17
ADEN-	-20
BAGHDAD-	-37
HANGKOK-	-39
JUMJAY-	-48
CALCUTTA-	-50
COLUMBO-	-87
QAHARAN-	-100
HANOI-	-215
KARACHI-	-238
MANDALAY-	-243
NEW DELHI-	-243
TEHRAN-	-243
TAHEDAN-	-244

LARSON AFB

ALAMEDA NAS-	-24
ANDREWS AFB-	-33
ROISE-	-44
CANNON AFB-	-55
CARSWELL AFB-	-61
CHICAGO-	-73
CHURCHILL-	-81
CORPUS CHRISTI-	-92
DOVER AFB-	-104

LARSON AFB (CONT.)

DUTCH HARBOR-	-107
EDMONTON-	-111
EGLIN AFB-	-117
EIELSON AFB-	-120
ELLINGTON AFB-	-124
ELLSWORTH AFB-	-130
ELMENDORF AFB-	-133
EL TORO MCAS-	-137
ENGLAND AFB-	-142
FORT BENNING-	-148
FORT BLISS-	-153
FORT BRAGG/POPE-	-157
FORT CAMPBELL-	-162
FORT CARSON-	-167
FORT EUSTIS-	-171
FORT HOOD-	-175
FORT HUACHUCA-	-180
FORT KNOX-	-184
FORT LEAVENWORTH-	-188
FORT ORD-	-195
FORT RUCKER-	-198
FORT SILL-	-201
FORT WOLTERS-	-205
FRIDISHER-	-208
GEN MITCHELL-	-211
HILL AFB-	-217
HUNTER AAF-	-224
HUNTSVILLE-	-227
JUNEAU-	-235
KODIAK-	-241
LITTLE ROCK-	-244
LOCKBOURNE-	-244
LUKE AFB-	-244
MCGUIRE AFB-	-244
MEMPHIS-	-244
MEXICO CITY-	-244
MINOT AFB-	-244
MINN-ST PAUL-	-244
NELLIS AFB-	-245
NEW CUMBERLAND-	-245
NEW ORLEANS-	-245
NIAGARA FALLS-	-245
OXNARD AFB-	-245
PITTSBURGH-	-245
PRUDHOE HAY-	-245
REGINA-	-245
SCOTT AFB-	-245
SELFRIDGE AFB-	-246
SHAW AFB-	-246
WESTOVER AFB-	-246
WURTSMITH-	-246
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LITTLE ROCK

ALAMEDA NAS-	-24
ANDREWS AFB-	-33
ROISE-	-44
CANNON AFB-	-55
CARSWELL AFB-	-61
CHERRY PT MCAS-	-67
CHICAGO-	-73
CHURCHILL-	-81
CORPUS CHRISTI-	-92
DOVER AFB-	-104
EDMONTON-	-112
EGLIN AFB-	-117
ELLINGTON AFB-	-124
ELLSWORTH AFB-	-130
EL TORO MCAS-	-137
ENGLAND AFB-	-142
FORT BENNING-	-148
FORT BLISS-	-153
FORT BRAGG/POPE-	-158
FORT CAMPBELL-	-162
FORT CARSON-	-167
FORT EUSTIS-	-171
FORT HOOD-	-175
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HILL AFB-	-217
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MCGUIRE AFB-	-246
MEXICO CITY-	-247
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PATRICK AFB-	-247
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YAKIMA-	-248
YELLOWKNIFE-	-248

LOCKBOURNE

ALAMEDA NAS-	-24
ANDREWS AFB-	-33
ROISE-	-44
CANNON AFB-	-55
CARSWELL AFB-	-61
CHERRY PT MCAS-	-67
CHICAGO-	-73
CHURCHILL-	-81
CORPUS CHRISTI-	-92
DOVER AFB-	-105
EDMONTON-	-112
EGLIN AFB-	-117
ELLINGTON AFB-	-124
ELLSWORTH AFB-	-130
EL TORO MCAS-	-137
ENGLAND AFB-	-142
FORT BENNING-	-148
FORT BLISS-	-153
FORT BRAGG/POPE-	-158
FORT CAMPBELL-	-162
FORT CARSON-	-167
FORT EUSTIS-	-171
FORT HOOD-	-175
FORT HUACHUCA-	-180
FORT KNOX-	-184
FORT LEAVENWORTH-	-188
FORT LEWIS-	-192
FORT ORD-	-195
FORT RUCKER-	-198
FORT SILL-	-202
FORT WOLTERS-	-205
FRIDISHER-	-208
GEN MITCHELL-	-211
HILL AFB-	-217
HOMESTEAD AFB-	-220
HUNTER AAF-	-225
HUNTSVILLE-	-227
JACKSONVILLE-	-232
KEY WEST-	-238
LARSON AFB-	-244
LITTLE ROCK-	-246
LORING AFB-	-249
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 MEXICO CITY - - - - -249
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 MINN-ST PAUL - - - - -249
 NELLIS AFB - - - - -249
 NEW CUMBERLAND - - - - -249
 NEW ORLEANS - - - - -250
 NIAGARA FALLS - - - - -250
 OXNARD AFB - - - - -250
 PATRICK AFB - - - - -250
 REGINA - - - - -250
 SCOTT AFB - - - - -250
 SELFRIDGE AFB - - - - -250
 SHAW AFB - - - - -250
 WESTOVER AFB - - - - -250
 Wurtsmith - - - - -251
 YAKIMA - - - - -251
 YELLOWKNIFE - - - - -251

LORING AFB

ANDREWS AFB - - - - -33
 CANNON AFB - - - - -55
 CARSWELL AFB - - - - -62
 CHERRY PT MCAS - - - - -67
 CHICAGO - - - - -73
 CHURCHILL - - - - -81
 CORPUS CHRISTI - - - - -92
 DODGE AFB - - - - -105
 EDMONTON - - - - -112
 EGLIN AFB - - - - -117
 ELLINGTON AFB - - - - -124
 ELLSWORTH AFB - - - - -130
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 FORT BENNING - - - - -148
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 FORT EUSTIS - - - - -172
 FORT HOOD - - - - -175
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 FROBISHER - - - - -208
 GEN MITCHELL - - - - -212
 HILL AFB - - - - -217
 HOMESTEAD AFB - - - - -220
 HUNTER AAF - - - - -225
 HUNTSVILLE - - - - -227
 JACKSONVILLE - - - - -232
 KEY WEST - - - - -238
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LOCKBOURNE - - - - -249
 MCGUIRE AFB - - - - -251
 MEMPHIS - - - - -251
 MINOT AFB - - - - -251
 MINN-ST PAUL - - - - -251
 NEW CUMBERLAND - - - - -251
 NEW ORLEANS - - - - -251
 NIAGARA FALLS - - - - -252
 PATRICK AFB - - - - -252
 PITTSBURGH - - - - -252
 REGINA - - - - -252
 SCOTT AFB - - - - -252
 SELFRIDGE AFB - - - - -252
 SHAW AFB - - - - -252
 THULE - - - - -252
 WESTOVER AFB - - - - -252
 Wurtsmith - - - - -253
 YELLOWKNIFE - - - - -253

LUKE AFB

ALAMEDA NAS - - - - -24
 ANDREWS AFB - - - - -34
 BOISE - - - - -44
 CANNON AFB - - - - -56
 CARSWELL AFB - - - - -62
 CHERRY PT MCAS - - - - -68
 CHICAGO - - - - -74
 CHURCHILL - - - - -81
 CORPUS CHRISTI - - - - -93
 DODGE AFB - - - - -105
 EDMONTON - - - - -112
 EGLIN AFB - - - - -117
 ELLINGTON AFB - - - - -125
 ELLSWORTH AFB - - - - -130
 EL TORN MCAS - - - - -137
 ENGLAND AFB - - - - -142
 FORT BENNING - - - - -148
 FORT BLISS - - - - -153
 FORT BRAGG/POPE - - - - -158
 FORT CAMPBELL - - - - -162
 FORT CARSON - - - - -167
 FORT EUSTIS - - - - -172
 FORT HOOD - - - - -176
 FORT HUACHUCA - - - - -180
 FORT KNOX - - - - -184
 FORT LEAVENWORTH - - - - -189
 FORT LEWIS - - - - -192
 FORT ORD - - - - -195
 FORT RUCKER - - - - -198
 FORT SILL - - - - -202
 FORT WOLTERS - - - - -205
 GEN MITCHELL - - - - -212
 HILL AFB - - - - -217
 HOMESTEAD AFB - - - - -220

LUKE AFB (CONT.)

HUNTER AAF - - - - -225
 HUNTSVILLE - - - - -227
 JACKSONVILLE - - - - -233
 JUNEAU - - - - -235
 KEY WEST - - - - -238
 LARSON AFB - - - - -244
 LITTLE ROCK - - - - -246
 LOCKBOURNE - - - - -249
 MCGUIRE AFB - - - - -253
 MEMPHIS - - - - -253
 MEXICO CITY - - - - -253
 MINOT AFB - - - - -253
 MINN-ST PAUL - - - - -253
 NELLIS AFB - - - - -253
 NEW CUMBERLAND - - - - -253
 NEW ORLEANS - - - - -254
 NIAGARA FALLS - - - - -254
 OXNARD AFB - - - - -254
 PATRICK AFB - - - - -254
 PITTSBURGH - - - - -254
 REGINA - - - - -254
 SCOTT AFB - - - - -254
 SELFRIDGE AFB - - - - -254
 SHAW AFB - - - - -254
 WESTOVER AFB - - - - -255
 Wurtsmith - - - - -255
 YAKIMA - - - - -255
 YELLOWKNIFE - - - - -255

MANDALAY

BANGKOK - - - - -39
 BOMBAY - - - - -48
 CALCUTTA - - - - -50
 CLARK AFB - - - - -85
 CULMANN - - - - -87
 DA NANG - - - - -96
 DAVAN - - - - -98
 DJAKARTA - - - - -101
 HANOI - - - - -215
 HONG KONG - - - - -223
 KADENA AB - - - - -237
 KARACHI - - - - -238
 KIMPH AFB - - - - -240
 LAHORE - - - - -243
 MEDAN - - - - -255
 NEW DELHI - - - - -255
 PEIPING - - - - -255
 PENANG - - - - -255
 PUSAN EAST - - - - -255
 SAIGON - - - - -256
 SHANGHAI - - - - -256
 SINGAPORE - - - - -256
 TAIPEI - - - - -256

MAURITIUS ISLAND

DIEGO GARCIA - - - - -100

MCGUIRE AFB

BOISE - - - - -45
 CANNON AFB - - - - -56
 CARSWELL AFB - - - - -62
 CHERRY PT MCAS - - - - -68
 CHICAGO - - - - -74
 CHURCHILL - - - - -82
 CORPUS CHRISTI - - - - -93
 EDMONTON - - - - -112
 EGLIN AFB - - - - -117
 ELLINGTON AFB - - - - -125
 ELLSWORTH AFB - - - - -130
 ENGLAND AFB - - - - -142
 FORT BENNING - - - - -148
 FORT BLISS - - - - -153
 FORT BRAGG/POPE - - - - -158
 FORT CAMPBELL - - - - -162
 FORT CARSON - - - - -167
 FORT HOOD - - - - -176
 FORT HUACHUCA - - - - -180
 FORT KNOX - - - - -184
 FORT LEAVENWORTH - - - - -189
 FORT RUCKER - - - - -198
 FORT SILL - - - - -202
 FORT WOLTERS - - - - -205
 FROBISHER - - - - -209
 GEN MITCHELL - - - - -212
 HILL AFB - - - - -218
 HOMESTEAD AFB - - - - -221
 HUNTER AAF - - - - -225
 HUNTSVILLE - - - - -228
 JACKSONVILLE - - - - -233
 KEY WEST - - - - -239
 LARSON AFB - - - - -244
 LITTLE ROCK - - - - -246
 LOCKBOURNE - - - - -249
 LORING AFB - - - - -251
 LUKE AFB - - - - -253
 MEMPHIS - - - - -256
 MEXICO CITY - - - - -256
 MINOT AFB - - - - -256
 MINN-ST PAUL - - - - -256
 NELLIS AFB - - - - -257
 NEW ORLEANS - - - - -257
 NIAGARA FALLS - - - - -257
 PATRICK AFB - - - - -257
 PITTSBURGH - - - - -257
 REGINA - - - - -257
 SCOTT AFB - - - - -257
 SELFRIDGE AFB - - - - -257
 SHAW AFB - - - - -257
 WESTOVER AFB - - - - -258

MCGUIRE AFB (CONT.)

WURTSMITH - - - - -258
YELLOWKNIFE - - - - -258

MEDAN

HANGKOK - - - - -39
BOMRAY - - - - -48
CALCUTTA - - - - -50
CLARK AFB - - - - -85
CULOMBO - - - - -87
DA NANG - - - - -96
DAVAO - - - - -99
DIEGO GARCIA - - - - -100
DJAKARTA - - - - -101
HANOI - - - - -215
HONG KONG - - - - -223
MANDALAY - - - - -255
NEW DELHI - - - - -258
SAIGON - - - - -258
SINGAPORE - - - - -258
TAIPEI - - - - -258

MELBOURNE

ADFLAIDE - - - - -19
BRISBANE - - - - -49
COOKTOWN - - - - -48
DARWIN - - - - -97
NOUMEA - - - - -258
PERTH - - - - -258
PORT MORFESBY - - - - -259
WELLINGTON - - - - -259

MEMPHIS

ALAMEDA NAS - - - - -24
ANDREWS AFB - - - - -34
BOISE - - - - -45
CANNON AFB - - - - -56
CARSWELL AFB - - - - -62
CHERRY PT MCAS - - - - -68
CHICAGO - - - - -74
CHURCHILL - - - - -82
CORPUS CHRISTI - - - - -93
DOVER AFB - - - - -105
EDMONTON - - - - -112
EGLIN AFB - - - - -118
ELLINGTON AFB - - - - -125
ELLSWORTH AFB - - - - -131
EL TORO MCAS - - - - -137
ENGLAND AFB - - - - -142
FORT BENNING - - - - -148
FORT BLISS - - - - -153
FORT BRAGG/POPE - - - - -158
FORT CAMPBELL - - - - -163
FORT CARSON - - - - -167
FORT EUSTIS - - - - -172

MEMPHIS (CONT.)

FORT HOOD - - - - -176
FORT HUACHUCA - - - - -180
FORT KNOX - - - - -184
FORT LEAVENWORTH - - - - -189
FORT LEWIS - - - - -192
FORT ORD - - - - -195
FORT RUCKER - - - - -199
FORT SILL - - - - -202
FORT WOLTERS - - - - -206
FROBISHER - - - - -209
GEN MITCHELL - - - - -212
HILL AFB - - - - -218
HOMESTEAD AFB - - - - -221
HUNTER AAF - - - - -225
HUNTSVILLE - - - - -228
JACKSONVILLE - - - - -233
KEY WEST - - - - -239
LARSON AFB - - - - -244
LOCKBOURNE - - - - -249
LORING AFB - - - - -251
LUKE AFB - - - - -253
MCGUIRE AFB - - - - -256
MEXICO CITY - - - - -259
MINOT AFB - - - - -259
MINN-ST PAUL - - - - -259
NELLIS AFB - - - - -259
NEW GUMBERLAND - - - - -259
NEW ORLEANS - - - - -259
NIAGARA FALLS - - - - -259
OXNARD AFB - - - - -260
PATRICK AFB - - - - -260
PITTSBURGH - - - - -260
REGINA - - - - -260
SCOTT AFB - - - - -260
SELFRIDGE AFB - - - - -260
SHAW AFB - - - - -260
WESTOVER AFB - - - - -260
WURTSMITH - - - - -260
YAKIMA - - - - -261
YELLOWKNIFE - - - - -261

MEXICO CITY

ALAMEDA NAS - - - - -25
ANDREWS AFB - - - - -34
BOISE - - - - -45
CANNON AFB - - - - -56
CARSWELL AFB - - - - -62
CHERRY PT MCAS - - - - -68
CHICAGO - - - - -74
CORPUS CHRISTI - - - - -93
DOVER AFB - - - - -105
EGLIN AFB - - - - -118
ELLINGTON AFB - - - - -125
ELLSWORTH AFB - - - - -131

MEXICO CITY (CONT.)

EL TORO MCAS - - - - -137
ENGLAND AFB - - - - -142
FORT BENNING - - - - -148
FORT BLISS - - - - -153
FORT BRAGG/POPE - - - - -158
FORT CAMPBELL - - - - -163
FORT CARSON - - - - -168
FORT EUSTIS - - - - -172
FORT HOOD - - - - -176
FORT HUACHUCA - - - - -180
FORT KNOX - - - - -185
FORT LEAVENWORTH - - - - -189
FORT ORD - - - - -195
FORT RUCKER - - - - -199
FORT SILL - - - - -202
FORT WOLTERS - - - - -206
GEN MITCHELL - - - - -212
HILL AFB - - - - -218
HOMESTEAD AFB - - - - -221
HUNTER AAF - - - - -225
HUNTSVILLE - - - - -228
JACKSONVILLE - - - - -233
KEY WEST - - - - -239
LARSON AFB - - - - -244
LITTLE ROCK - - - - -247
LOCKBOURNE - - - - -249
LUKE AFB - - - - -253
MCGUIRE AFB - - - - -256
MEMPHIS - - - - -259
MINOT AFB - - - - -261
MINN-ST PAUL - - - - -261
NELLIS AFB - - - - -261
NEW GUMBERLAND - - - - -261
NEW ORLEANS - - - - -261
NIAGARA FALLS - - - - -261
OXNARD AFB - - - - -261
PATRICK AFB - - - - -262
PITTSBURGH - - - - -262
REGINA - - - - -262
SCOTT AFB - - - - -262
SELFRIDGE AFB - - - - -262
SHAW AFB - - - - -262
WESTOVER AFB - - - - -262
WURTSMITH - - - - -262
YAKIMA - - - - -262

MIDWAY ISLAND

ADAK NS - - - - -18
ATTU - - - - -36
DUTCH HARBOR - - - - -108
ENIWETOK ATOLL - - - - -145
HICKAM AFB - - - - -216
JOHNSTON ISLAND - - - - -235
KWAJALEIN NS - - - - -242

MIDWAY ISLAND (CONT.)

SHEMYA - - - - -263
WAKE ISLAND - - - - -263

MINOT AFB

ALAMEDA NAS - - - - -25
ANDREWS AFB - - - - -34
BOISE - - - - -45
CANNON AFB - - - - -56
CARSWELL AFB - - - - -62
CHERRY PT MCAS - - - - -68
CHICAGO - - - - -74
CHURCHILL - - - - -82
CORPUS CHRISTI - - - - -93
DOVER AFB - - - - -105
EDMONTON - - - - -112
EGLIN AFB - - - - -118
EIELSON AFB - - - - -121
ELLINGTON AFB - - - - -125
ELLSWORTH AFB - - - - -131
ELMENDORF AFB - - - - -133
EL TORO MCAS - - - - -138
ENGLAND AFB - - - - -143
FORT BENNING - - - - -149
FORT BLISS - - - - -154
FORT BRAGG/POPE - - - - -158
FORT CAMPBELL - - - - -163
FORT CARSON - - - - -168
FORT EUSTIS - - - - -172
FORT HOOD - - - - -176
FORT HUACHUCA - - - - -180
FORT KNOX - - - - -185
FORT LEAVENWORTH - - - - -189
FORT LEWIS - - - - -192
FORT ORD - - - - -195
FORT RUCKER - - - - -199
FORT SILL - - - - -202
FORT WOLTERS - - - - -206
FROBISHER - - - - -209
GEN MITCHELL - - - - -212
HILL AFB - - - - -218
HOMESTEAD AFB - - - - -221
HUNTER AAF - - - - -225
HUNTSVILLE - - - - -228
JACKSONVILLE - - - - -233
JUNEAU - - - - -235
KEY WEST - - - - -239
KODIAK - - - - -241
LARSON AFB - - - - -244
LITTLE ROCK - - - - -247
LOCKBOURNE - - - - -249
LORING AFB - - - - -251
LUKE AFB - - - - -253
MCGUIRE AFB - - - - -256
MEMPHIS - - - - -259

MINOT AFB (CONT.)

MEXICO CITY	-261
MINN-ST PAUL	-263
NELLIS AFB	-263
NEW CUMBERLAND	-263
NEW ORLEANS	-263
NIAGARA FALLS	-263
ONNARD AFB	-263
PATRICK AFB	-263
PITTSBURGH	-264
PRUDHOE BAY	-264
REGINA	-264
SCOTT AFB	-264
SELFRIDGE AFB	-264
SHAW AFB	-264
THULE	-264
WESTOVER AFB	-264
WURTSMITH	-264
YAKIMA	-265
YELLOWKNIFE	-265

MINN-ST PAUL

ALAMEDA NAS	-25
ANDREWS AFB	-34
BOISE	-45
CANNON AFB	-56
CANSWELL AFB	-62
CHERRY PT MCAS	-68
CHICAGO	-74
CHURCHILL	-92
CORPUS CHRISTI	-93
DOVER AFB	-105
EDMONTON	-112
EGLIN AFB	-118
ELLINGTON AFB	-125
ELLSWORTH AFB	-131
EL TORO MCAS	-138
ENGLAND AFB	-143
FORT BENNING	-149
FORT BLISS	-154
FORT BRAGG/POPE	-158
FORT CARSON	-163
FORT EUSTIS	-172
FORT HOOD	-176
FORT HUACHUCA	-180
FORT KNOX	-185
FORT LEAVENWORTH	-189
FORT LEWIS	-192
FORT ORD	-196
FORT RUCKER	-199
FORT SILL	-202
FORT WOLTERS	-206
FRONTISHER	-209
GEN MITCHELL	-212

MINN-ST PAUL (CONT.)

HILL AFB	-210
HOMESTEAD AFB	-221
HUNTER AFB	-225
HUNTSVILLE	-228
JACKSONVILLE	-233
JUNEAU	-235
KEY WEST	-239
LANSON AFB	-244
LITTLE ROCK	-247
LUCKAQUANE	-249
LORING AFB	-251
LUKE AFB	-253
MCGUIRE AFB	-257
MEMPHIS	-259
MEXICO CITY	-261
MINOT AFB	-263
NELLIS AFB	-265
NEW CUMBERLAND	-265
NEW ORLEANS	-265
NIAGARA FALLS	-265
ONNARD AFB	-265
PATRICK AFB	-265
PITTSBURGH	-265
REGINA	-266
SCOTT AFB	-266
SELFRIDGE AFB	-266
SHAW AFB	-266
THULE	-266
WESTOVER AFB	-266
WURTSMITH	-266
YAKIMA	-266
YELLOWKNIFE	-266

MISAWA AB

ADAK NS	-18
ANDERSON AFB	-29
ATTU	-36
CLARK AFB	-45
IMING KUNG	-223
IRAWADI	-230
IWO JIMA AB	-231
KADENA AB	-237
KIMPO AB	-241
PEIPING	-267
PUSAN EAST	-267
SHANGHAI	-267
SHEMIA	-267
TAIPEI	-267
TOKYO	-267
WAKE ISLAND	-267

NELLIS AFB

ALAMEDA NAS	-25
ANDREWS AFB	-34

NELLIS AFB (CONT.)

BOISE	-45
CANNON AFB	-56
CANSWELL AFB	-62
CHERRY PT MCAS	-68
CHICAGO	-74
CHURCHILL	-92
CORPUS CHRISTI	-93
DOVER AFB	-105
EDMONTON	-112
EGLIN AFB	-118
ELLINGTON AFB	-125
ELLSWORTH AFB	-131
ELMENDORF AFB	-138
EL TORO MCAS	-138
ENGLAND AFB	-143
FORT BENNING	-149
FORT BLISS	-154
FORT BRAGG/POPE	-158
FORT CAMPBELL	-163
FORT CARSON	-166
FORT EUSTIS	-172
FORT HOOD	-176
FORT HUACHUCA	-180
FORT KNOX	-185
FORT LEAVENWORTH	-189
FORT LEWIS	-192
FORT ORD	-196
FORT RUCKER	-199
FORT SILL	-202
FORT WOLTERS	-206
GEN MITCHELL	-212
HILL AFB	-210
HOMESTEAD AFB	-221
HUNTER AFB	-225
HUNTSVILLE	-228
JACKSONVILLE	-233
JUNEAU	-235
KEY WEST	-239
KODIAK	-242
LANSON AFB	-244
LITTLE ROCK	-247
LUCKAQUANE	-249
LUKE AFB	-253
MCGUIRE AFB	-257
MEMPHIS	-259
MEXICO CITY	-261
MINOT AFB	-263
MINN-ST PAUL	-265
NEW CUMBERLAND	-265
NEW ORLEANS	-265
NIAGARA FALLS	-265
ONNARD AFB	-265
PATRICK AFB	-265
PITTSBURGH	-265

NELLIS AFB (CONT.)

REGINA	-264
SCOTT AFB	-264
SELFRIDGE AFB	-264
SHAW AFB	-264
WESTOVER AFB	-264
WURTSMITH	-264
YAKIMA	-265
YELLOWKNIFE	-265

NEW CUMBERLAND

BOISE	-45
CANNON AFB	-56
CANSWELL AFB	-62
CHERRY PT MCAS	-68
CHICAGO	-74
CHURCHILL	-92
CORPUS CHRISTI	-93
EDMONTON	-112
EGLIN AFB	-118
ELLINGTON AFB	-125
ELLSWORTH AFB	-131
EL TORO MCAS	-138
ENGLAND AFB	-143
FORT BENNING	-149
FORT BLISS	-154
FORT BRAGG/POPE	-158
FORT CAMPBELL	-163
FORT CARSON	-166
FORT EUSTIS	-172
FORT HUACHUCA	-180
FORT KNOX	-185
FORT LEAVENWORTH	-189
FORT LEWIS	-192
FORT ORD	-196
FORT RUCKER	-199
FORT SILL	-202
FORT WOLTERS	-206
FRONTISHER	-209
GEN MITCHELL	-212
HILL AFB	-210
HOMESTEAD AFB	-221
HUNTER AFB	-225
HUNTSVILLE	-228
JACKSONVILLE	-233
KEY WEST	-239
LANSON AFB	-244
LITTLE ROCK	-247
LUCKAQUANE	-249
LUKE AFB	-253
MEMPHIS	-259
MEXICO CITY	-261
MINOT AFB	-263
MINN-ST PAUL	-265
NELLIS AFB	-265

NEW CUMBERLAND (CONT.)

NEW ORLEANS	-	-	-	-	-269
NIAGARA FALLS	-	-	-	-	-269
PATRICK AFB	-	-	-	-	-269
PITTSBURGH	-	-	-	-	-269
REGINA	-	-	-	-	-269
SCOTT AFB	-	-	-	-	-269
SELFRIDGE AFB	-	-	-	-	-270
SHAW AFB	-	-	-	-	-270
WESTOVER AFB	-	-	-	-	-270
WRIGHTSMITH	-	-	-	-	-270
YAKIMA	-	-	-	-	-270
YELLINGHAM	-	-	-	-	-270

NEW DELHI

AMMAN	-	-	-	-	17
BAHRAIN	-	-	-	-	37
HANNAH	-	-	-	-	39
BOMBAY	-	-	-	-	40
CALCUTTA	-	-	-	-	40
COLUMBO	-	-	-	-	87
DA HANG	-	-	-	-	90
DMANHAN	-	-	-	-	-100
HANOI	-	-	-	-	-215
KARACHI	-	-	-	-	-210
LAHORE	-	-	-	-	-243
MADAGASCAR	-	-	-	-	-255
MEDAN	-	-	-	-	-250
PHNOM	-	-	-	-	-270
SAIGON	-	-	-	-	-270
TEHRAN	-	-	-	-	-270
ZAHEDAN	-	-	-	-	-271

NEW ORLEANS

ALAMEDA NAS	-	-	-	-	25
ANDREWS AFB	-	-	-	-	34
BOISE	-	-	-	-	45
CANNON AFB	-	-	-	-	56
CARSWELL AFB	-	-	-	-	63
CHERRY PT MCAS	-	-	-	-	64
CHICAGO	-	-	-	-	74
CHURCHILL	-	-	-	-	82
CORPUS CHRISTI	-	-	-	-	93
DUIVE AFB	-	-	-	-	-195
EDMONTON	-	-	-	-	-113
EGLIN AFB	-	-	-	-	-110
ELLINGTON AFB	-	-	-	-	-125
ELLSWORTH AFB	-	-	-	-	-131
FL TOWN MCAS	-	-	-	-	-130
ENGLAND AFB	-	-	-	-	-143
FORT BENNING	-	-	-	-	-149
FORT ALISS	-	-	-	-	-154
FORT BRAGG/POPE	-	-	-	-	-159
FORT CAMPBELL	-	-	-	-	-163
FORT CARSON	-	-	-	-	-168

NEW ORLEANS (CONT.)

FORT EUSTIS	-	-	-	-	-172
FORT HOOD	-	-	-	-	-176
FORT HUACHUCA	-	-	-	-	-181
FORT KNOX	-	-	-	-	-189
FORT LEAVENWORTH	-	-	-	-	-189
FORT LEWIS	-	-	-	-	-193
FORT ORD	-	-	-	-	-196
FORT RUCKER	-	-	-	-	-199
FORT SILL	-	-	-	-	-203
FORT WALTERS	-	-	-	-	-206
GEN MITCHELL	-	-	-	-	-213
HILL AFB	-	-	-	-	-219
HUNTER AFB	-	-	-	-	-226
HUNTSVILLE	-	-	-	-	-229
JACKSONVILLE	-	-	-	-	-234
KFY WEST	-	-	-	-	-239
LARSON AFB	-	-	-	-	-245
LITTLE ROCK	-	-	-	-	-247
LOCKHART	-	-	-	-	-250
LUKE AFB	-	-	-	-	-254
LUKE AFB	-	-	-	-	-254
MC GUIRE AFB	-	-	-	-	-257
MEMPHIS	-	-	-	-	-259
MEXICO CITY	-	-	-	-	-261
MINOT AFB	-	-	-	-	-263
MINN-ST PAUL	-	-	-	-	-265
NELLIS AFB	-	-	-	-	-267
NEW CUMBERLAND	-	-	-	-	-269
NIAGARA FALLS	-	-	-	-	-271
ONHARD AFB	-	-	-	-	-271
PATRICK AFB	-	-	-	-	-271
PITTSBURGH	-	-	-	-	-271
REGINA	-	-	-	-	-271
SCOTT AFB	-	-	-	-	-271
SELFRIDGE AFB	-	-	-	-	-271
SHAW AFB	-	-	-	-	-271
WESTOVER AFB	-	-	-	-	-272
WRIGHTSMITH	-	-	-	-	-272
YAKIMA	-	-	-	-	-272

NIAGARA FALLS

ALAMEDA NAS	-	-	-	-	25
ANDREWS AFB	-	-	-	-	34
BOISE	-	-	-	-	45
CANNON AFB	-	-	-	-	56
CARSWELL AFB	-	-	-	-	63
CHERRY PT MCAS	-	-	-	-	64
CHICAGO	-	-	-	-	74
CHURCHILL	-	-	-	-	82
CORPUS CHRISTI	-	-	-	-	93
DUIVE AFB	-	-	-	-	-195
EDMONTON	-	-	-	-	-113
EGLIN AFB	-	-	-	-	-110

NIAGARA FALLS (CONT.)

ELLINGTON AFB	-	-	-	-	-126
ELLSWORTH AFB	-	-	-	-	-131
FL TOWN MCAS	-	-	-	-	-130
ENGLAND AFB	-	-	-	-	-143
FORT BENNING	-	-	-	-	-149
FORT ALISS	-	-	-	-	-154
FORT BRAGG/POPE	-	-	-	-	-159
FORT CAMPBELL	-	-	-	-	-163
FORT CARSON	-	-	-	-	-168
FORT EUSTIS	-	-	-	-	-172
FORT HOOD	-	-	-	-	-176
FORT HUACHUCA	-	-	-	-	-181
FORT KNOX	-	-	-	-	-189
FORT LEAVENWORTH	-	-	-	-	-189
FORT LEWIS	-	-	-	-	-193
FORT ORD	-	-	-	-	-196
FORT RUCKER	-	-	-	-	-199
FORT SILL	-	-	-	-	-203
FORT WALTERS	-	-	-	-	-206
FRIDSMAN	-	-	-	-	-209
GEN MITCHELL	-	-	-	-	-213
HILL AFB	-	-	-	-	-219
HUNTER AFB	-	-	-	-	-226
HUNTSVILLE	-	-	-	-	-229
JACKSONVILLE	-	-	-	-	-234
KFY WEST	-	-	-	-	-239
LARSON AFB	-	-	-	-	-245
LITTLE ROCK	-	-	-	-	-247
LOCKHART	-	-	-	-	-250
LUKE AFB	-	-	-	-	-254
LUKE AFB	-	-	-	-	-254
MC GUIRE AFB	-	-	-	-	-257
MEMPHIS	-	-	-	-	-259
MEXICO CITY	-	-	-	-	-261
MINOT AFB	-	-	-	-	-263
MINN-ST PAUL	-	-	-	-	-265
NELLIS AFB	-	-	-	-	-267
NEW CUMBERLAND	-	-	-	-	-269
NEW ORLEANS	-	-	-	-	-271
ONHARD AFB	-	-	-	-	-271
PATRICK AFB	-	-	-	-	-271
PITTSBURGH	-	-	-	-	-271
REGINA	-	-	-	-	-271
SCOTT AFB	-	-	-	-	-271
SELFRIDGE AFB	-	-	-	-	-271
SHAW AFB	-	-	-	-	-271
WESTOVER AFB	-	-	-	-	-272
WRIGHTSMITH	-	-	-	-	-272
YAKIMA	-	-	-	-	-272
YELLINGHAM	-	-	-	-	-272

NIAGARA

ADLAIDE	-	-	-	-	19
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NIAGARA (CONT.)

BRISBANE	-	-	-	-	49
COOKTOWN	-	-	-	-	88
KWAJALEIN NS	-	-	-	-	-243
MELBOURNE	-	-	-	-	-258
PAGE PAGE	-	-	-	-	-273
PORT MORESBY	-	-	-	-	-273
SUVA, FIJI	-	-	-	-	-273
VANIMO	-	-	-	-	-273
WELLINGTON	-	-	-	-	-274

ONHARD AFB

ALAMEDA NAS	-	-	-	-	25
BOISE	-	-	-	-	45
CANNON AFB	-	-	-	-	56
CARSWELL AFB	-	-	-	-	63
CHICAGO	-	-	-	-	74
CHURCHILL	-	-	-	-	82
CORPUS CHRISTI	-	-	-	-	93
EDMONTON	-	-	-	-	-113
EGLIN AFB	-	-	-	-	-110
ELLINGTON AFB	-	-	-	-	-126
ELLSWORTH AFB	-	-	-	-	-131
ENGLAND AFB	-	-	-	-	-143
FORT BENNING	-	-	-	-	-149
FORT ALISS	-	-	-	-	-154
FORT BRAGG/POPE	-	-	-	-	-159
FORT CAMPBELL	-	-	-	-	-163
FORT CARSON	-	-	-	-	-168
FORT HOOD	-	-	-	-	-176
FORT HUACHUCA	-	-	-	-	-181
FORT KNOX	-	-	-	-	-189
FORT LEAVENWORTH	-	-	-	-	-189
FORT LEWIS	-	-	-	-	-193
FORT ORD	-	-	-	-	-196
FORT RUCKER	-	-	-	-	-199
FORT SILL	-	-	-	-	-203
FORT WALTERS	-	-	-	-	-206
GEN MITCHELL	-	-	-	-	-213
HILL AFB	-	-	-	-	-219
HUNTER AFB	-	-	-	-	-226
HUNTSVILLE	-	-	-	-	-229
JACKSONVILLE	-	-	-	-	-234
JUNEAU	-	-	-	-	-236
KNOX	-	-	-	-	-242
LARSON AFB	-	-	-	-	-245
LITTLE ROCK	-	-	-	-	-247
LOCKHART	-	-	-	-	-250
LUKE AFB	-	-	-	-	-254
LUKE AFB	-	-	-	-	-254
MC GUIRE	-	-	-	-	-257
MEMPHIS	-	-	-	-	-259
MEXICO CITY	-	-	-	-	-261
MINOT AFB	-	-	-	-	-263
MINN-ST PAUL	-	-	-	-	-265
NELLIS AFB	-	-	-	-	-267
NEW CUMBERLAND	-	-	-	-	-269
NEW ORLEANS	-	-	-	-	-271

OXNARD AFB (CONT.)		PATRICK AFB (CONT.)		PENANG (CONT.)		PITTSBURGH (CONT.)	
NIAGARA FALLS	-272	HUNTER AAF	-226	DJAKARTA	-101	HUNTER AAF	-226
PATRICK AFB	-274	HUNTSVILLE	-229	HANOI	-215	HUNTSVILLE	-229
PITTSBURGH	-274	KEY WEST	-240	HONG KONG	-223	JACKSONVILLE	-214
REGINA	-274	LITTLE ROCK	-247	MANDALAY	-255	KEY WEST	-240
SCOTT AFB	-274	LOCKBOURNE	-250	NEW DELHI	-270	LARSON AFB	-245
SELFRIDGE AFB	-274	LORING AFB	-252	SAIGON	-276	LITTLE ROCK	-248
SHAW AFB	-274	LUKE AFB	-254	SHANGHAI	-277	LORING AFB	-252
WURTSMITH	-274	MCGUIRE AFB	-257	SINGAPORE	-277	LUKE AFB	-254
YAKIMA	-274	MEMPHIS	-260	TAIPEI	-277	MCGUIRE AFB	-257
YELLOWKNIFE	-275	MEXICO CITY	-262			MEMPHIS	-260
		MINOT AFB	-263			MEXICO CITY	-262
PAGO PAGO		MINN-ST PAUL	-265	PERTH		MINOT AFB	-264
JOHNSTON ISLAND	-235	NELLIS AFB	-268	ADELAIDE	-19	MINN-ST PAUL	-265
KWAJALEIN NS	-243	NEW CUMBERLAND	-269	BRISBANE	-49	NELLIS AFB	-268
NIUEA	-273	NEW ORLEANS	-271	COCKTOWN	-88	NEW CUMBERLAND	-269
PAPEETE	-275	NIAGARA FALLS	-272	DARWIN	-97	NEW ORLEANS	-271
SUVA, FIJI	-275	OXNARD AFB	-274	DJAKARTA	-101	NIAGARA FALLS	-272
WELLINGTON	-275	PITTSBURGH	-275	MELBOURNE	-258	OXNARD AFB	-274
		REGINA	-275			PATRICK AFB	-275
PAPERET		SCOTT AFB	-275	PITTSBURGH		REGINA	-277
PAGO PAGO	-275	SELFRIDGE AFB	-275	ALAMEDA NAS	-25	SCOTT AFB	-277
SUVA, FIJI	-275	SHAW AFB	-276	ANDREWS AFB	-35	SELFRIDGE AFB	-277
		WESTOVER AFB	-276	NOISE	-46	SHAW AFB	-277
		WURTSMITH	-276	CANNON AFB	-57	WESTOVER AFB	-277
PATRICK AFB				CARSWELL AFB	-63	WURTSMITH	-277
ANDREWS AFB	-34			CHERRY PT MCAS	-69	YAKIMA	-278
NOISE	-46	PEIPING		CHICAGO	-75	YELLOWKNIFE	-278
CANNON AFB	-57	HANGKOK	-39	CHURCHILL	-83		
CARSWELL AFB	-63	CALCUTTA	-50	CORPUS CHRISTI	-94	PORT MORESBY	
CHERRY PT MCAS	-69	CHITOSE AB	-77	DAVEN AFB	-106	ADELAIDE	-19
CHICAGO	-75	CLARK AFB	-85	EDMONTON	-113	ANDERSON AFB	-29
CHURCHILL	-83	DA NANG	-96	EGLIN AFB	-119	BRISBANE	-49
CORPUS CHRISTI	-94	HANOI	-215	ELLINGTON AFB	-126	COCKTOWN	-89
DIVER AFB	-106	HONG KONG	-223	ELLSWORTH AFB	-132	DARWIN	-97
EGLIN AFB	-119	IMAKUNI	-230	EL TORO MCAS	-138	DAVAN	-99
ELLINGTON AFB	-126	IMU JIMA AB	-231	ENGLAND AFB	-143	ENIWETOK ATOLL	-145
ELLSWORTH AFB	-132	KADENA AB	-237	FORT BENNING	-149	KWAJALEIN NS	-243
EL TORO MCAS	-138	KIMPO AB	-241	FORT BLISS	-154	MELBOURNE	-259
ENGLAND AFB	-143	MANDALAY	-255	FORT BRAGG/POPE	-159	NOUMEA	-273
FORT BENNING	-149	MISAWA AB	-267	FORT CAMPBELL	-164	SUVA, FIJI	-278
FORT BLISS	-154	PUSAN EAST	-276	FORT CARSON	-169	VANIMO	-278
FORT BRAGG/POPE	-159	SAIGON	-276	FORT EUSTIS	-173		
FORT CAMPBELL	-164	SHANGHAI	-276	FORT HOOD	-177	PRUDHOF BAY	
FORT CARSON	-169	TAIPEI	-276	FORT HUACHUCA	-181	ADAK NS	-19
FORT EUSTIS	-173	TOKYO	-276	FORT KNOX	-186	ALERT	-27
FORT HOOD	-177			FORT LEAVENWORTH	-190	ATTU	-36
FORT HUACHUCA	-181	PENANG		FORT LEWIS	-193	NOISE	-46
FORT KNOX	-186	HANGKOK	-39	FORT LORAIN	-196	CHURCHILL	-83
FORT LEAVENWORTH	-190	IMAHAY	-48	FORT RUCKER	-200	DUTCH HARBOR	-108
FORT RUCKER	-200	CALCUTTA	-51	FORT SILL	-203	EDMONTON	-113
FORT SILL	-203	CLARK AFB	-85	FORT WALTERS	-207	EIELSON AFB	-121
FORT WALTERS	-207	COLUMBO	-87	FROBISHER	-209	ELMENDORF AFB	-134
GEN MITCHELL	-213	DA NANG	-96	GEN MITCHELL	-213	FORT LEWIS	-193
HILL AFB	-219	DAVAN	-99	HILL AFB	-219	FROBISHER	-209
HOMESTEAD AFB	-222	JIFGO GARCIA	-100	HOMESTEAD AFB	-222		

PRUDHIE BAY (CONT.)

JUNFAU - - - - -236
 KODIAK - - - - -242
 LARSON AFB - - - - -245
 MINOT AFB - - - - -246
 REGINA - - - - -278
 SHERMAN - - - - -278
 THULE - - - - -278
 YAKIMA - - - - -278
 YELLOWKNIFE - - - - -278

PUSAN EAST

ANDERSON AFB - - - - 29
 BANGKOK - - - - -39
 CHITOSE AB - - - - 77
 CLARK AFB - - - - 86
 DA NANG - - - - 96
 DAVAO - - - - 99
 HANOI - - - - -215
 HONG KONG - - - - -223
 IWAKUNI - - - - -230
 IWO JIMA AB - - - - -231
 KADENA AB - - - - -237
 KIMPO AB - - - - -241
 MANDALAY - - - - -255
 MISAWA AB - - - - -267
 PEIPING - - - - -276
 SAIGON - - - - -279
 SHANGHAI - - - - -279
 TAIPEI - - - - -279
 TOKYO - - - - -279

REGINA

ALAMEDA NAS - - - - 25
 ANDREWS AFB - - - - 35
 BOISE - - - - 46
 CANNON AFB - - - - 57
 CARSWELL AFB - - - - 63
 CHERRY PT MCAS - - - - 69
 CHICAGO - - - - 75
 CHURCHILL - - - - 83
 CORPUS CHRISTI - - - - 94
 DOVER AFB - - - - -106
 EDMONTON - - - - -113
 EGLIN AFB - - - - -119
 FIELSON AFB - - - - -121
 ELLINGTON AFB - - - - -126
 ELLSWORTH AFB - - - - -132
 EL TORO MCAS - - - - -134
 EL TORO MCAS - - - - -138
 ENGLAND AFB - - - - -144
 FORT BENNING - - - - -150
 FORT BLISS - - - - -155
 FORT BRAGG/POPE - - - - -159
 FORT CAMPBELL - - - - -164

REGINA (CONT.)

FORT CARSON - - - - -169
 FORT EUSTIS - - - - -173
 FORT HOOD - - - - -177
 FORT HUACHUCA - - - - -181
 FORT KNOX - - - - -186
 FORT LEAVENWORTH - - - - -190
 FORT LEWIS - - - - -193
 FORT ORD - - - - -196
 FORT RUCKER - - - - -200
 FORT SILL - - - - -203
 FORT WOLTERS - - - - -207
 FROBISHER - - - - -209
 GEN MITCHELL - - - - -213
 HILL AFB - - - - -219
 HOMESTEAD AFB - - - - -222
 HUNTER AAF - - - - -226
 HUNTSVILLE - - - - -229
 JACKSONVILLE - - - - -234
 JUNFAU - - - - -236
 KEY WEST - - - - -240
 KODIAK - - - - -242
 LARSON AFB - - - - -245
 LITTLE ROCK - - - - -248
 LOCKBOURNE - - - - -250
 LORING AFB - - - - -252
 LUKE AFB - - - - -254
 MCGUIRE AFB - - - - -257
 MEMPHIS - - - - -260
 MEXICO CITY - - - - -262
 MINOT AFB - - - - -264
 MINN-ST PAUL - - - - -266
 NELLIS AFB - - - - -268
 NEW CUMBERLAND - - - - -269
 NEW ORLEANS - - - - -271
 NIAGARA FALLS - - - - -272
 OAKLAND AFB - - - - -274
 PATRICK AFB - - - - -275
 PITTSBURGH - - - - -277
 PRUDHIE BAY - - - - -278
 SCOTT AFB - - - - -279
 SELFRIDGE AFB - - - - -279
 SHAW AFB - - - - -279
 THULE - - - - -279
 WESTOVER AFB - - - - -279
 Wurtsmith - - - - -280
 YAKIMA - - - - -280
 YELLOWKNIFE - - - - -280

SAIGON

HANGKOK - - - - 40
 CALCUTTA - - - - 51
 CLARK AFB - - - - 86
 COLONNO - - - - 87
 DA NANG - - - - 96

SAIGON (CONT.)

DAVAO - - - - 99
 DJAKARTA - - - - -101
 HANOI - - - - -215
 HONG KONG - - - - -224
 IWAKUNI - - - - -230
 KADENA AB - - - - -237
 KIMPO AB - - - - -241
 MANDALAY - - - - -256
 MEDAN - - - - -258
 NEW DELHI - - - - -270
 PEIPING - - - - -276
 PENANG - - - - -276
 PUSAN EAST - - - - -279
 SHANGHAI - - - - -280
 SINGAPORE - - - - -280
 TAIPEI - - - - -280

SCOTT AFB

ALAMEDA NAS - - - - 26
 ANDREWS AFB - - - - 35
 BOISE - - - - 46
 CANNON AFB - - - - 57
 CARSWELL AFB - - - - 63
 CHERRY PT MCAS - - - - 69
 CHICAGO - - - - 75
 CHURCHILL - - - - 83
 CORPUS CHRISTI - - - - 94
 DOVER AFB - - - - -106
 EDMONTON - - - - -113
 EGLIN AFB - - - - -119
 ELLINGTON AFB - - - - -126
 ELLSWORTH AFB - - - - -132
 EL TORO MCAS - - - - -139
 ENGLAND AFB - - - - -144
 FORT BENNING - - - - -150
 FORT BLISS - - - - -155
 FORT BRAGG/POPE - - - - -159
 FORT CAMPBELL - - - - -164
 FORT CARSON - - - - -169
 FORT EUSTIS - - - - -173
 FORT HOOD - - - - -177
 FORT HUACHUCA - - - - -181
 FORT KNOX - - - - -186
 FORT LEAVENWORTH - - - - -190
 FORT LEWIS - - - - -193
 FORT ORD - - - - -196
 FORT RUCKER - - - - -200
 FORT SILL - - - - -203
 FORT WOLTERS - - - - -207
 FROBISHER - - - - -210
 GEN MITCHELL - - - - -213
 HILL AFB - - - - -219
 HOMESTEAD AFB - - - - -222
 HUNTER AAF - - - - -226

SCOTT AFB (CONT.)

HUNTSVILLE - - - - -229
 JACKSONVILLE - - - - -234
 KEY WEST - - - - -240
 LARSON AFB - - - - -245
 LITTLE ROCK - - - - -248
 LOCKBOURNE - - - - -250
 LORING AFB - - - - -252
 LUKE AFB - - - - -254
 MCGUIRE AFB - - - - -257
 MEMPHIS - - - - -260
 MEXICO CITY - - - - -262
 MINOT AFB - - - - -264
 MINN-ST PAUL - - - - -266
 NELLIS AFB - - - - -268
 NEW CUMBERLAND - - - - -269
 NEW ORLEANS - - - - -271
 NIAGARA FALLS - - - - -272
 OAKLAND AFB - - - - -274
 PATRICK AFB - - - - -275
 PITTSBURGH - - - - -277
 REGINA - - - - -279
 SELFRIDGE AFB - - - - -280
 SHAW AFB - - - - -280
 WESTOVER AFB - - - - -280
 Wurtsmith - - - - -281
 YAKIMA - - - - -281
 YELLOWKNIFE - - - - -281

SELFRIEDGE AFB

ALAMEDA NAS - - - - 26
 ANDREWS AFB - - - - 35
 BOISE - - - - 46
 CANNON AFB - - - - 57
 CARSWELL AFB - - - - 63
 CHERRY PT MCAS - - - - 69
 CHICAGO - - - - 75
 CHURCHILL - - - - 83
 CORPUS CHRISTI - - - - 94
 DOVER AFB - - - - -106
 EDMONTON - - - - -113
 EGLIN AFB - - - - -119
 ELLINGTON AFB - - - - -126
 ELLSWORTH AFB - - - - -132
 EL TORO MCAS - - - - -139
 ENGLAND AFB - - - - -144
 FORT BENNING - - - - -150
 FORT BLISS - - - - -155
 FORT BRAGG/POPE - - - - -160
 FORT CAMPBELL - - - - -164
 FORT CARSON - - - - -169
 FORT EUSTIS - - - - -173
 FORT HOOD - - - - -177
 FORT HUACHUCA - - - - -182
 FORT KNOX - - - - -186

SELEFRIDGE AFB (CONT.)		SHANGHAI (CONT.)		SHAW AFB (CONT.)		TAIPEI	
FORT LEAVENWORTH-	-190	PEIPING - - - - -	-276	NEW ORLEANS - - - - -	-271	ANDERSON AFB- - - - -	29
FORT LEWIS- - - - -	-194	PENANG- - - - -	-277	NIAGARA FALLS - - - - -	-273	BANGKOK - - - - -	40
FORT ORD- - - - -	-196	PUSAN EAST- - - - -	-279	OXNARD AFB- - - - -	-274	CALCUTTA- - - - -	51
FORT RUCKER - - - - -	-200	SAIGON- - - - -	-280	PATRICK AFB - - - - -	-276	CHITOSE AB- - - - -	77
FORT SILL - - - - -	-203	TAIPEI- - - - -	-281	PITTSBURGH- - - - -	-277	CLARK AFB - - - - -	86
FORT WOLTERS- - - - -	-207	TOKYO - - - - -	-281	REGINA- - - - -	-279	DA NANG - - - - -	97
FROBISHER - - - - -	-210			SCOTT AFB - - - - -	-280	DAYAO - - - - -	99
GEN MITCHELL- - - - -	-213	SHAW AFB		SELEFRIDGE AFB - - - - -	-281	HANOI - - - - -	216
HILL AFB- - - - -	-219	ANDREWS AFB - - - - -	35	WESTOVER AFB- - - - -	-282	HONG KONG - - - - -	224
HOMESTEAD AFB - - - - -	-222	BOISE - - - - -	46	WURTSMITH - - - - -	-282	INAKUNI - - - - -	231
HUNTER AAF- - - - -	-226	CANNON AFB- - - - -	57	YAKIMA- - - - -	-282	IWO JIMA AB - - - - -	232
HUNTSVILLE- - - - -	-229	CANSMELL AFB- - - - -	63			KADENA AB - - - - -	237
JACKSONVILLE- - - - -	-234	CHERRY PT MCAS- - - - -	69	SHEMYA		KIMPO AB- - - - -	241
KEY WEST- - - - -	-240	CHICAGO - - - - -	75	ADAK NS - - - - -	19	MANDALAY- - - - -	256
LARSON AFB- - - - -	-246	CHURCHILL - - - - -	83	CHITOSE AB- - - - -	77	MEDAN - - - - -	258
LITTLE ROCK - - - - -	-248	CORPUS CHRISTI- - - - -	94	DUTCH HARBOR- - - - -	108	MISAWA AB - - - - -	267
LOCKBOURNE- - - - -	-250	DOVER AFB - - - - -	106	ELLSWORTH AFB - - - - -	134	PEIPING - - - - -	276
LORING AFB- - - - -	-252	EDMONTON- - - - -	114	JUNEAU- - - - -	236	PENANG- - - - -	277
LUKE AFB- - - - -	-254	ELLINGTON AFB - - - - -	126	KODIAK- - - - -	242	PUSAN EAST- - - - -	279
MCGUIRE AFB - - - - -	-257	ELLSWORTH AFB - - - - -	132	MIDWAY ISLAND - - - - -	263	SAIGON- - - - -	280
MEMPHIS - - - - -	-260	EL TORO MCAS - - - - -	139	MISAWA AB - - - - -	267	SHANGHAI- - - - -	281
MEXICO CITY - - - - -	-262	ENGLAND AFB - - - - -	144	PRUDHUE BAY - - - - -	278	SINGAPORE - - - - -	282
MINOT AFB - - - - -	-264	FORT HENNING- - - - -	150	TOKYO - - - - -	282		
MINN-ST PAUL- - - - -	-266	FORT BLISS- - - - -	155			TEHRAN	
NELLIS AFB- - - - -	-268	FORT CAMPBELL - - - - -	164	SINGAPORE		ABADAN- - - - -	17
NEW CUMBERLAND- - - - -	-270	FORT CARSON - - - - -	169	BANGKOK - - - - -	40	ADEN- - - - -	20
NEW ORLEANS - - - - -	-271	FORT EUSTIS - - - - -	173	CALCUTTA- - - - -	51	BAGHDAD - - - - -	37
NIAGARA FALLS - - - - -	-272	FORT HOND - - - - -	177	CLARK AFB - - - - -	86	BOMBAY - - - - -	40
OXNARD AFB- - - - -	-274	FORT HUACHUCA - - - - -	182	COLOMBO - - - - -	88	DHAHRAN - - - - -	100
PATRICK AFB - - - - -	-275	FORT KNIX - - - - -	186	DA NANG - - - - -	97	KARACHI - - - - -	238
PITTSBURGH- - - - -	-277	FORT LEAVENWORTH- - - - -	190	DARWIN- - - - -	97	LAHORE - - - - -	243
REGINA- - - - -	-279	FORT RUCKER - - - - -	200	DAYAO - - - - -	99	NEW DELHI - - - - -	270
SCOTT AFB - - - - -	-280	FORT SILL - - - - -	204	DIEGO GARCIA- - - - -	101	ZAHEDAN - - - - -	282
SHAW AFB- - - - -	-281	FORT WOLTERS- - - - -	207	DJAKARTA- - - - -	101		
WESTOVER AFB- - - - -	-281	FROBISHER - - - - -	210	HANOI - - - - -	216	THULE	
YAKIMA- - - - -	-281	GEN MITCHELL- - - - -	213	HONG KONG - - - - -	224	ALERT - - - - -	27
YELLOWKNIFE - - - - -	-281	HILL AFB- - - - -	219	MANDALAY- - - - -	256	CHURCHILL - - - - -	83
		HOMESTEAD AFB - - - - -	222	MEDAN - - - - -	258	EDMONTON- - - - -	114
SHANGHAI		HUNTSVILLE- - - - -	229	PENANG- - - - -	277	ELLSWORTH AFB - - - - -	121
ANDERSON AFB- - - - -	29	JACKSONVILLE- - - - -	234	SAIGON- - - - -	280	ELMENDORF AFB - - - - -	134
BANGKOK - - - - -	40	KEY WEST- - - - -	240	TAIPEI- - - - -	282	FROBISHER - - - - -	210
CALCUTTA- - - - -	51	LARSON AFB- - - - -	246			JUNEAU- - - - -	236
CHITOSE AB- - - - -	77	LITTLE ROCK - - - - -	248	SUVA, FIJI		KODIAK- - - - -	242
CLARK AFB - - - - -	86	LOCKBOURNE- - - - -	250	BRISBANE- - - - -	49	LORING AFB- - - - -	252
DA NANG - - - - -	96	LORING AFB- - - - -	252	COOKTOWN- - - - -	89	MINOT AFB - - - - -	264
DAYAO - - - - -	99	LUKE AFB- - - - -	254	ENIWEATOK ATOLL - - - - -	145	MINN-ST PAUL- - - - -	266
HANOI - - - - -	215	MCGUIRE AFB - - - - -	257	KWAJALEIN NS- - - - -	243	PRUDHUE BAY - - - - -	278
HONG KONG - - - - -	224	MEMPHIS - - - - -	260	NUMEA- - - - -	273	REGINA- - - - -	279
INAKUNI - - - - -	231	MEXICO CITY - - - - -	262	PAGO PAGO - - - - -	275	WURTSMITH - - - - -	282
IWO JIMA AB - - - - -	232	MINOT AFB - - - - -	264	PAPEETE - - - - -	275	YELLOWKNIFE - - - - -	283
KADENA AB - - - - -	237	MINN-ST PAUL- - - - -	266	PORT MORESBY- - - - -	278		
KIMPO AB- - - - -	241	NELLIS AFB- - - - -	268	WELLINGTON- - - - -	282	TOKYO	
MANDALAY- - - - -	256	NEW CUMBERLAND- - - - -	270			ANDERSON AFB- - - - -	29
MISAWA AB - - - - -	267						

TOKYO (CONT.)

ATTU - - - - - 37
 CHITOSE AB - - - - - 77
 CLARK AFB - - - - - 86
 DAVAO - - - - - 99
 ENIWETOK ATOLL - - - - - 145
 HANOI - - - - - 216
 HONG KONG - - - - - 224
 IWAKUNI - - - - - 231
 IWO JIMA AB - - - - - 232
 KADENA AB - - - - - 237
 KIMP AB - - - - - 241
 MISAWA AB - - - - - 267
 PEIPING - - - - - 276
 PUSAN EAST - - - - - 279
 SHANGHAI - - - - - 281
 SHENYANG - - - - - 282
 TAIPEI - - - - - 282
 WAKE ISLAND - - - - - 283

VANIMO

ADELAIDE - - - - - 20
 ANDERSON AFB - - - - - 29
 BRISBANE - - - - - 49
 CLARK AFB - - - - - 86
 COKKTOWN - - - - - 89
 DARWIN - - - - - 97
 DAVAO - - - - - 99
 ENIWETOK ATOLL - - - - - 145
 IWO JIMA AB - - - - - 232
 KADENA AB - - - - - 237
 KWAJALEIN NS - - - - - 243
 NOUMFA - - - - - 273
 PORT MURFESBY - - - - - 278
 WAKE ISLAND - - - - - 283

WAKE ISLAND

ANDERSON AFB - - - - - 29
 CHITOSE AB - - - - - 77
 ENIWETOK ATOLL - - - - - 145
 HICKAM AFB - - - - - 216
 IWO JIMA AB - - - - - 232
 JOHNSTON ISLAND - - - - - 235
 KWAJALEIN NS - - - - - 243
 MIDWAY ISLAND - - - - - 263
 MISAWA AB - - - - - 267
 TOKYO - - - - - 283
 VANIMO - - - - - 283

WELLINGTON

ADELAIDE - - - - - 20
 BRISBANE - - - - - 49
 MELBOURNE - - - - - 259
 NOUMFA - - - - - 274
 PAGO PAGO - - - - - 275

WELLINGTON (CONT.)

SUVA, FIJI - - - - - 282

WESTOVER AFB

ANDREWS AFB - - - - - 35
 ROISE - - - - - 46
 CANNON AFB - - - - - 57
 CARSWELL AFB - - - - - 64
 CHERRY PT MCAS - - - - - 69
 CHICAGO - - - - - 75
 CHURCHILL - - - - - 83
 CORPUS CHRISTI - - - - - 94
 DOVER AFB - - - - - 106
 EDMONTON - - - - - 114
 EGLIN AFB - - - - - 119
 ELLINGTON AFB - - - - - 126
 ELLSWORTH AFB - - - - - 132
 ENGLAND AFB - - - - - 144
 FORT BENNING - - - - - 150
 FORT BLISS - - - - - 155
 FORT BRAGG/POPE - - - - - 160
 FORT CAMPBELL - - - - - 164
 FORT CARSON - - - - - 169
 FORT EUSTIS - - - - - 173
 FORT HOND - - - - - 177
 FORT HUACHUCA - - - - - 182
 FORT KNOX - - - - - 186
 FORT LEAVENWORTH - - - - - 190
 FORT RUCKER - - - - - 200
 FORT SILL - - - - - 204
 FORT WOLTERS - - - - - 207
 FROBISHER - - - - - 210
 GEN MITCHELL - - - - - 214
 HILL AFB - - - - - 219
 HOMESTEAD AFB - - - - - 222
 HUNTER AFB - - - - - 227
 HUNTSVILLE - - - - - 229
 JACKSONVILLE - - - - - 234
 KEY WEST - - - - - 240
 LARSON AFB - - - - - 246
 LITTLE ROCK - - - - - 248
 LOCKBOURNE - - - - - 250
 LORING AFB - - - - - 253
 LUKE AFB - - - - - 255
 MCGUIRE AFB - - - - - 258
 MEMPHIS - - - - - 260
 MEXICO CITY - - - - - 262
 MINOT AFB - - - - - 264
 MINN-ST PAUL - - - - - 266
 NELLIS AFB - - - - - 268
 NEW CUMBERLAND - - - - - 270
 NEW ORLEANS - - - - - 272
 NIAGARA FALLS - - - - - 273
 PATRICK AFB - - - - - 276
 PITTSBURGH - - - - - 277

WESTOVER AFB (CONT.)

REGINA - - - - - 279
 SCOTT AFB - - - - - 280
 SELFRIDGE AFB - - - - - 281
 SHAW AFB - - - - - 282
 WURTSMITH - - - - - 283
 YELLOWKNIFE - - - - - 283

WURTSMITH

ALAMEDA NAS - - - - - 26
 ANDREWS AFB - - - - - 35
 ROISE - - - - - 47
 CANNON AFB - - - - - 58
 CARSWELL AFB - - - - - 64
 CHERRY PT MCAS - - - - - 69
 CHICAGO - - - - - 76
 CHURCHILL - - - - - 84
 CORPUS CHRISTI - - - - - 95
 DOVER AFB - - - - - 106
 EDMONTON - - - - - 114
 EGLIN AFB - - - - - 119
 ELLINGTON AFB - - - - - 127
 ELLSWORTH AFB - - - - - 132
 EL TORO MCAS - - - - - 139
 ENGLAND AFB - - - - - 144
 FORT BENNING - - - - - 150
 FORT BLISS - - - - - 155
 FORT BRAGG/POPE - - - - - 160
 FORT CAMPBELL - - - - - 164
 FORT CARSON - - - - - 169
 FORT EUSTIS - - - - - 173
 FORT HOND - - - - - 178
 FORT HUACHUCA - - - - - 182
 FORT KNOX - - - - - 186
 FORT LEAVENWORTH - - - - - 191
 FORT LEWIS - - - - - 194
 FORT ORD - - - - - 197
 FORT RUCKER - - - - - 200
 FORT SILL - - - - - 204
 FORT WOLTERS - - - - - 207
 FROBISHER - - - - - 210
 GEN MITCHELL - - - - - 214
 HILL AFB - - - - - 219
 HOMESTEAD AFB - - - - - 222
 HUNTER AFB - - - - - 227
 HUNTSVILLE - - - - - 229
 JACKSONVILLE - - - - - 234
 KEY WEST - - - - - 240
 LARSON AFB - - - - - 246
 LITTLE ROCK - - - - - 248
 LOCKBOURNE - - - - - 251
 LORING AFB - - - - - 253
 LUKE AFB - - - - - 255
 MCGUIRE AFB - - - - - 258
 MEMPHIS - - - - - 260

WURTSMITH (CONT.)

MEXICO CITY - - - - - 262
 MINOT AFB - - - - - 264
 MINN-ST PAUL - - - - - 266
 NELLIS AFB - - - - - 268
 NEW CUMBERLAND - - - - - 270
 NEW ORLEANS - - - - - 272
 NIAGARA FALLS - - - - - 273
 OXNARD AFB - - - - - 274
 PATRICK AFB - - - - - 276
 PITTSBURGH - - - - - 277
 REGINA - - - - - 280
 SCOTT AFB - - - - - 281
 SHAW AFB - - - - - 282
 THULE - - - - - 282
 WESTOVER AFB - - - - - 283
 YAKIMA - - - - - 283
 YELLOWKNIFE - - - - - 283

YAKIMA

ALAMEDA NAS - - - - - 26
 ANDREWS AFB - - - - - 35
 ROISE - - - - - 47
 CANNON AFB - - - - - 58
 CARSWELL AFB - - - - - 64
 CHICAGO - - - - - 76
 CHURCHILL - - - - - 84
 CORPUS CHRISTI - - - - - 95
 DUTCH HARBOR - - - - - 108
 EDMONTON - - - - - 114
 EGLIN AFB - - - - - 119
 ELLSON AFB - - - - - 121
 ELLINGTON AFB - - - - - 127
 ELLSWORTH AFB - - - - - 132
 ELMENDORF AFB - - - - - 134
 EL TORO MCAS - - - - - 139
 ENGLAND AFB - - - - - 144
 FORT BENNING - - - - - 150
 FORT BLISS - - - - - 155
 FORT BRAGG/POPE - - - - - 160
 FORT CAMPBELL - - - - - 164
 FORT CARSON - - - - - 169
 FORT EUSTIS - - - - - 173
 FORT HOND - - - - - 178
 FORT HUACHUCA - - - - - 182
 FORT KNOX - - - - - 186
 FORT LEAVENWORTH - - - - - 191
 FORT ORD - - - - - 197
 FORT RUCKER - - - - - 200
 FORT SILL - - - - - 204
 FORT WOLTERS - - - - - 207
 FROBISHER - - - - - 210
 GEN MITCHELL - - - - - 214
 HILL AFB - - - - - 219
 HUNTER AFB - - - - - 227
 HUNTSVILLE - - - - - 229
 JACKSONVILLE - - - - - 234
 KEY WEST - - - - - 240
 LARSON AFB - - - - - 246
 LITTLE ROCK - - - - - 248
 LOCKBOURNE - - - - - 251
 LORING AFB - - - - - 253
 LUKE AFB - - - - - 255
 MCGUIRE AFB - - - - - 258
 MEMPHIS - - - - - 260

YAKIMA (CONT.)

JUNEAU - - - - -236
 KODIAK - - - - -242
 LITTLE ROCK - - - -248
 LOCKBOURNE - - - -251
 LUKE AFB - - - - -255
 MEMPHIS - - - - -261
 MEXICO CITY - - - -262
 MINOT AFB - - - - -265
 MINN-ST PAUL - - - -266
 NELLIS AFB - - - - -269
 NEW CUMBERLAND - - -270
 NEW ORLEANS - - - -272
 NIAGARA FALLS - - -273
 OXNARD AFB - - - - -274
 PITTSBURGH - - - - -278
 PRUDHOE BAY - - - -278
 REGINA - - - - -280
 SCOTT AFB - - - - -281
 SELFRIEDGE AFB - - -281
 SHAW AFB - - - - -282
 WURTSMITH - - - - -283
 YELLOWKNIFE - - - -283

YELLOWKNIFE

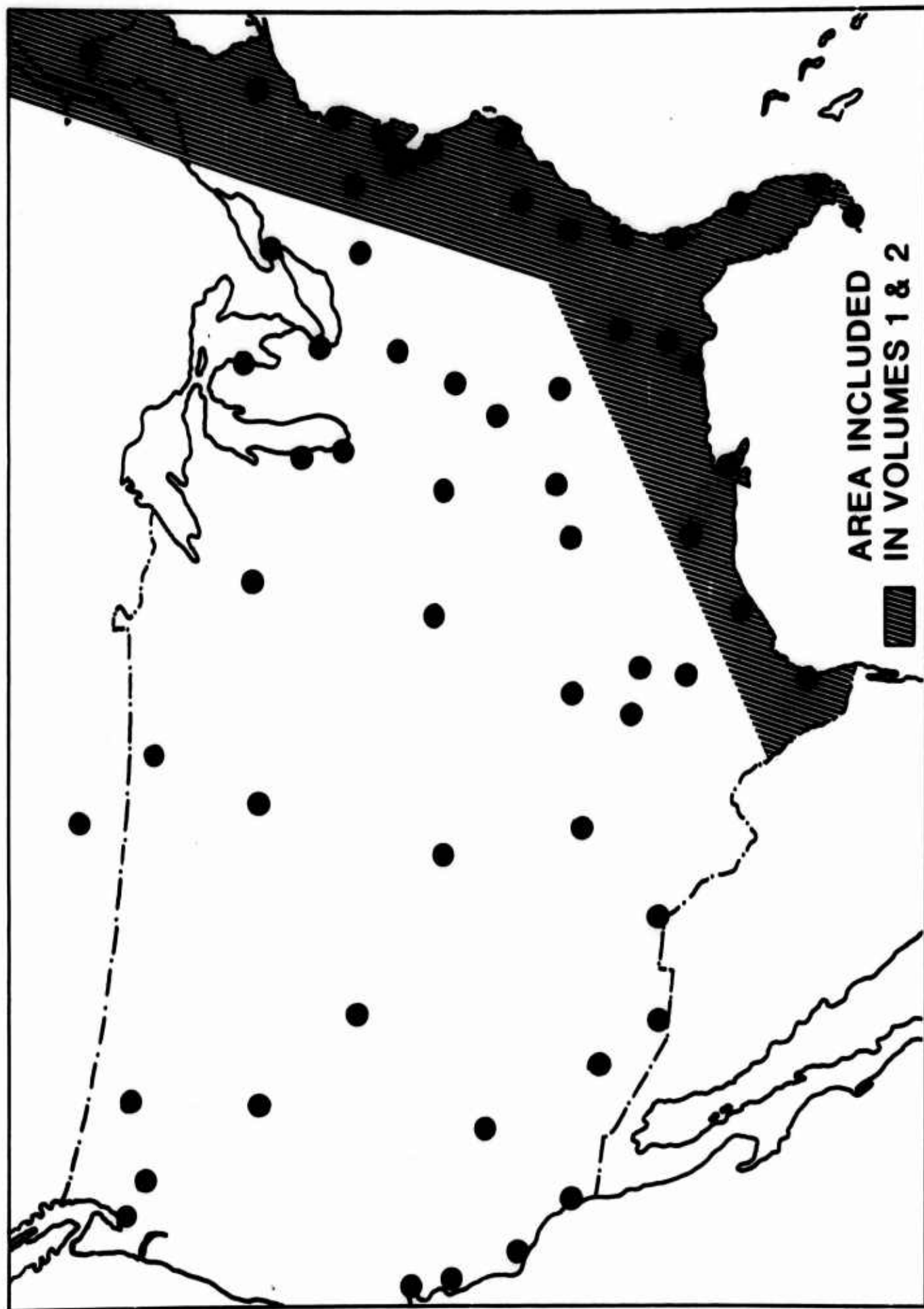
ALAMEDA NAS - - - -26
 ALERT - - - - -27
 ANDREWS AFB - - - -35
 BOISE - - - - -47
 CANNON AFB - - - -58
 CARSWELL AFB - - - -64
 CHICAGO - - - - -76
 CHURCHILL - - - - -84
 DOWER AFB - - - -107
 DUTCH HARBOR - - -108
 EDMONTON - - - -114
 EIELSON AFB - - - -121
 ELLSWORTH AFB - - -133
 FLYNNORF AFB - - -134
 EL TORO MCAS - - -139
 FORT BLISS - - - -155
 FORT CAMPBELL - - -165
 FORT CARSON - - - -169
 FORT HOOD - - - -178
 FORT HUACHUCA - - -182
 FORT KNOX - - - -186
 FORT LEAVENWORTH - -191
 FORT LEWIS - - - -194
 FORT ORD - - - -197
 FORT SILL - - - -204
 FORT WALTERS - - -208
 FORT WISHER - - - -210
 GEN MITCHELL - - -214
 HILL AFB - - - -220
 HUNTSVILLE - - -230

YELLOWKNIFE (CONT.)

JUNEAU - - - - -236
 KODIAK - - - - -242
 LARSON AFB - - - -246
 LITTLE ROCK - - - -248
 LOCKBOURNE - - - -251
 LORING AFB - - - -253
 LUKE AFB - - - - -255
 MCGUIRE AFB - - - -258
 MEMPHIS - - - - -261
 MINOT AFB - - - - -265
 MINN-ST PAUL - - - -266
 NELLIS AFB - - - - -269
 NEW CUMBERLAND - - -270
 NIAGARA FALLS - - -273
 OXNARD AFB - - - - -275
 PITTSBURGH - - - - -278
 PRUDHOE BAY - - - -278
 REGINA - - - - -280
 SCOTT AFB - - - - -281
 SELFRIEDGE AFB - - -281
 THULE - - - - -283
 WESTOVER AFB - - -283
 WURTSMITH - - - - -283
 YAKIMA - - - - -283

ZAHEDAN

AHADAN - - - - -17
 ADEN - - - - -20
 BAGHDAD - - - - -37
 BOMHAY - - - - -48
 CALCUTTA - - - - -51
 COLIMBO - - - - -88
 DHAMRAN - - - - -100
 KARACHI - - - - -238
 LAMORE - - - - -244
 MANDALAY - - - - -256
 NEW DELHI - - - - -271
 TEHRAN - - - - -282



BOEING VERTOL COMPANY

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